

EA Project No.: 15-2100

DATE OF ADDENDUM ISSUANCE: Monday, February 1, 2016

The Project Manual and Drawings dated January 15, 2016 for the above referenced project are hereby amended as follows:

Notice: This addendum is issued to all prospective bidders as an amendment to the Drawings and Project Manual for the Park Middle School Addition Project. Bidders shall acknowledge this addendum on the Bid Form. All information contained herein shall be fully incorporated into the Contract Documents as though originally included therein.

GENERAL INFORMATION

- Item AD-1 **General Item: An additional pre-bid conference will be conducted on site Thursday February 4th, 2016 at 4:00 PM.**
- Item AD-2 This Addendum consists of the following summary of addendum modifications (3 pages total) and referenced attachments indicated below:
- A. 'Attachment A: Encompass Architects (Architect)' – (7) drawing Sheets, (1) page document titled 'Addendum Item AD-4: Section 042000 – Unit Masonry'.
 - B. 'Attachment B: R.O. Youker (Structural Engineer)' – (1) page document titled 'Addendum Items: Revisions to the Drawings'.
 - C. 'Attachment C: ME Group (Mechanical, Electrical, Plumbing Engineers)' – (3) drawing Sheets.
 - D. 'Attachment D: Olsson Associates (Geotechnical Engineer)' – (39) page document titled 'Report of Geotechnical Exploration'.
 - E. See 'Attachment E: Pre-Construction Conference Agenda and Attendance Sign-in Sheet' (2 pages total) for documentation of a pre-bid conference conducted on site on Tuesday January 26th, 2016 at 3:30 PM.

MODIFICATIONS TO THE PROJECT MANUAL

- Item AD-3 Section 006100 – Existing Condition Information
- A. Article 1.1.D: Reference attached 'Report of Geotechnical Exploration' issued under this addendum, to be attached to spec section (see 'Attachment D').
- Item AD-4 Section 042000 – Unit Masonry
- A. Reference attached 'Addendum Item AD-4: Section 042000 – Unit Masonry' for added language to this spec section ('Attachment A').

Item AD-17 Sheet M202

- A. Replace sheet in its entirety with attached Sheet 'M202 – Well Field Site Plan'; plan has been updated to coordinate with site plan (see 'Attachment C').

Item AD-18 Sheet P201

- A. Replace sheet in its entirety with attached Sheet ' P201 – Enlarged Plumbing Plan'; corrected location of mop sink and pipe routing (see 'Attachment C').

Item AD-19 Sheet E401

- A. Replace sheet in its entirety with attached Sheet 'E401 – Electrical Schedules'; condensed schedules on sheet to fit within print margins (see 'Attachment C').

End of Addendum No. 1

ATTACHMENT A:

Encompass Architects (Architect)

Modification	Sheet Affected
1. Addendum Item AD-4: Section 042000 – Unit Masonry	--
2. CD001 – Site Demolition Plan	CD001
3. AC101 – Architectural Site Layout Plan and Details	AC101
4. ASK01 – Remove Aluminum Storefront Windows	AD002
5. ASK02 – Updated Grille Locations / New ACT Ceiling	A201
6. ASK03 – Revised Window Type ‘H’ / Added Fire-Rated Wall	A504
7. ASK04 – Added Detail 18	A506
8. ASK05 – Revise Window Type ‘H’	A601

Addendum item AD-4

Section 042000 – Unit Masonry

- Paragraph 1.1.A, add the following item
“3. Fire rated glass block.”
- Add the following Article 2.12 as follows:

“2.12 FIRE RATED GLASS BLOCK

A. General: where indicated on the Drawings, provide fire-rated glass block at infill of existing exterior windows to achieve 90-minute rating.

1. Product: provide Pittsburgh Corning Glass Block Products, Thickset 90 Block, Decora Pattern.
2. Size: nominal 8” wide by 8” tall by 4” thick.
3. Assembly Rating: 90 minutes.
4. Mortar, Reinforcing and Accessories: as required by manufacturer to achieve rating indicated.”

- Add the following Article 3.13 as follows:

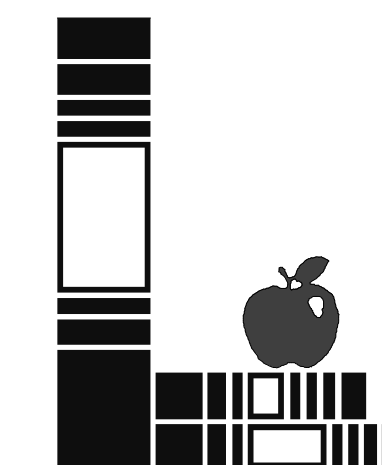
“3.13 FIRE RATED GLASS BLOCK INSTALLATION

A. Contractor shall inspect existing conditions and provide assembly as recommended by the Manufacturer to achieve the fire rating indicated.

B. Install fire rated glass block in accordance with Manufacturer’s instructions and recommendations.”

Consultants

Professional Seal



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Facilities Department
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Lincoln, NE 68510
(402) 436-1072

PARK MIDDLE SCHOOL ADDITION

LINCOLN PUBLIC SCHOOLS
855 S. 8TH ST.
LINCOLN, NE 68508

15 JAN 2016
EA Project No. 15-2100

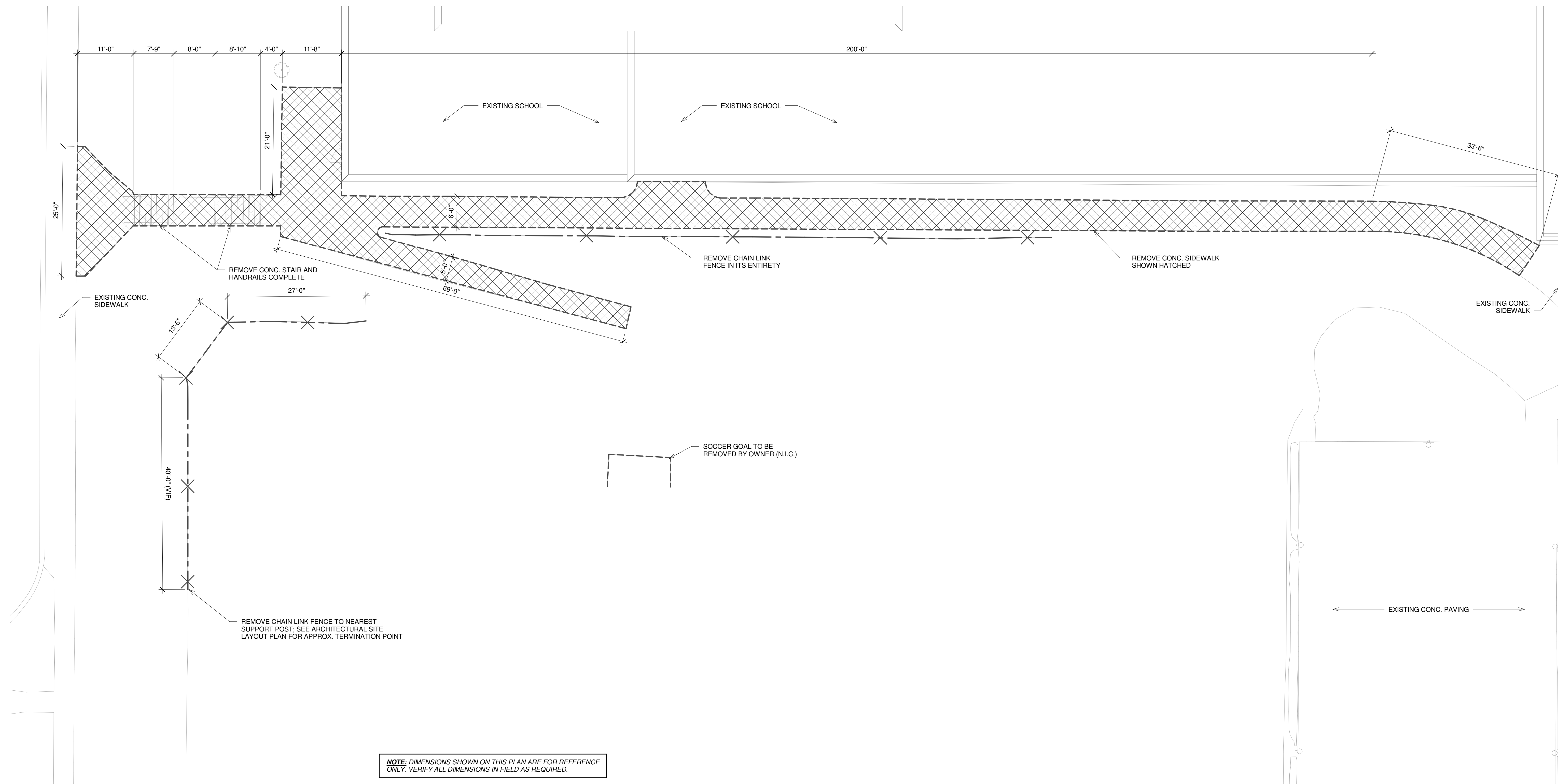
CONSTRUCTION DOCUMENTS

Revisions
1. ADDENDUM #1 DATE: 01/29/2016

SITE DEMOLITION PLAN

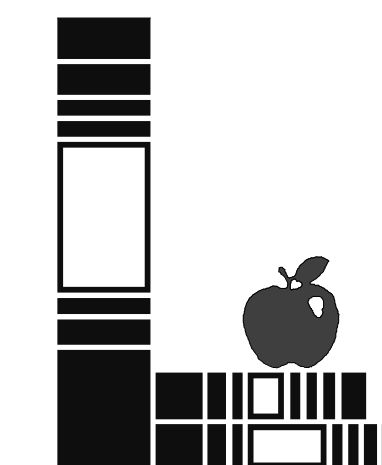
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CD001



1 SITE DEMOLITION PLAN
CD001 SCALE: 1" = 10'-0"





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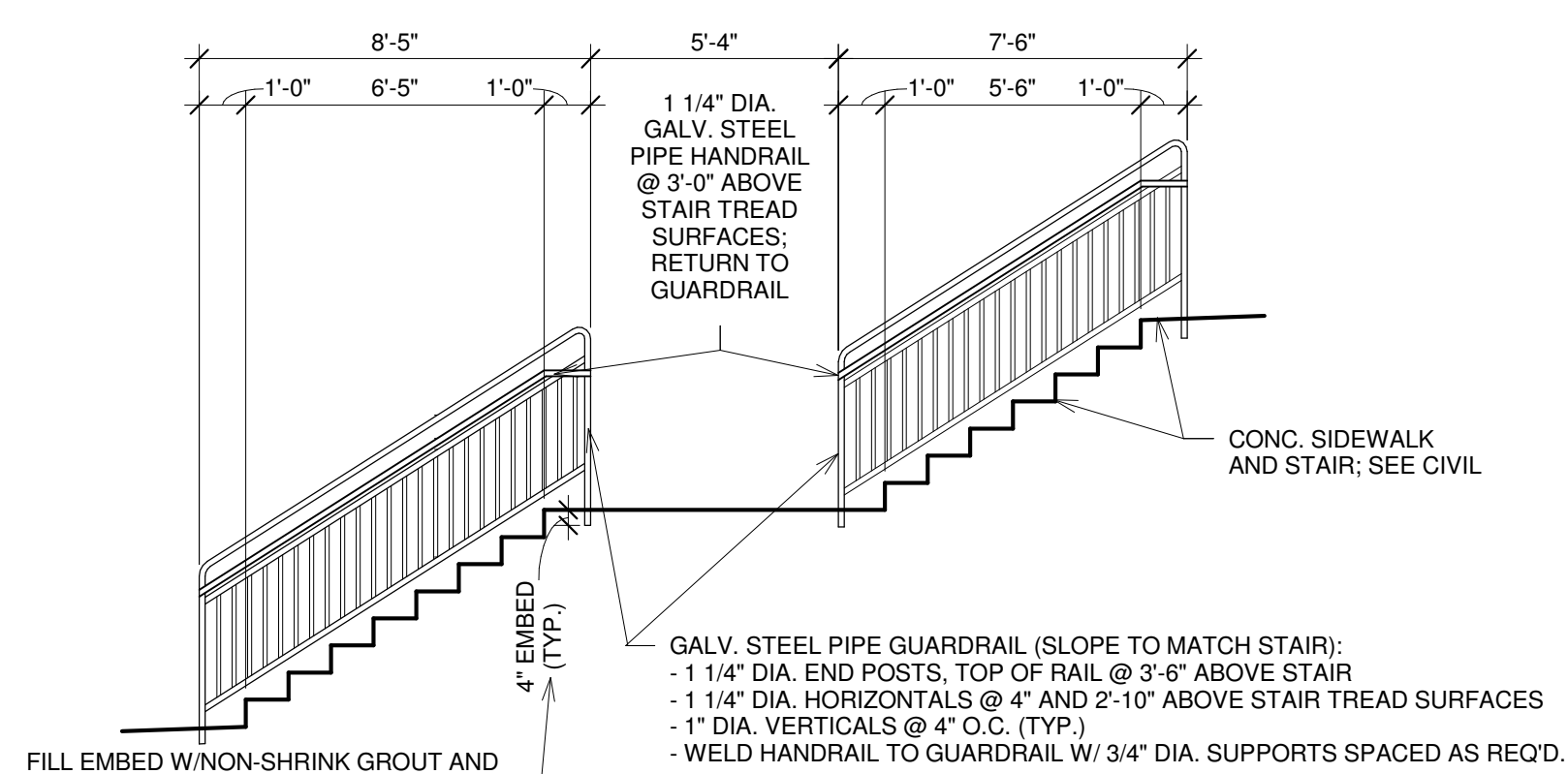
CONSTRUCTION DOCUMENTS

Revisions
1. ADDENDUM #1 DATE: 01/29/2016

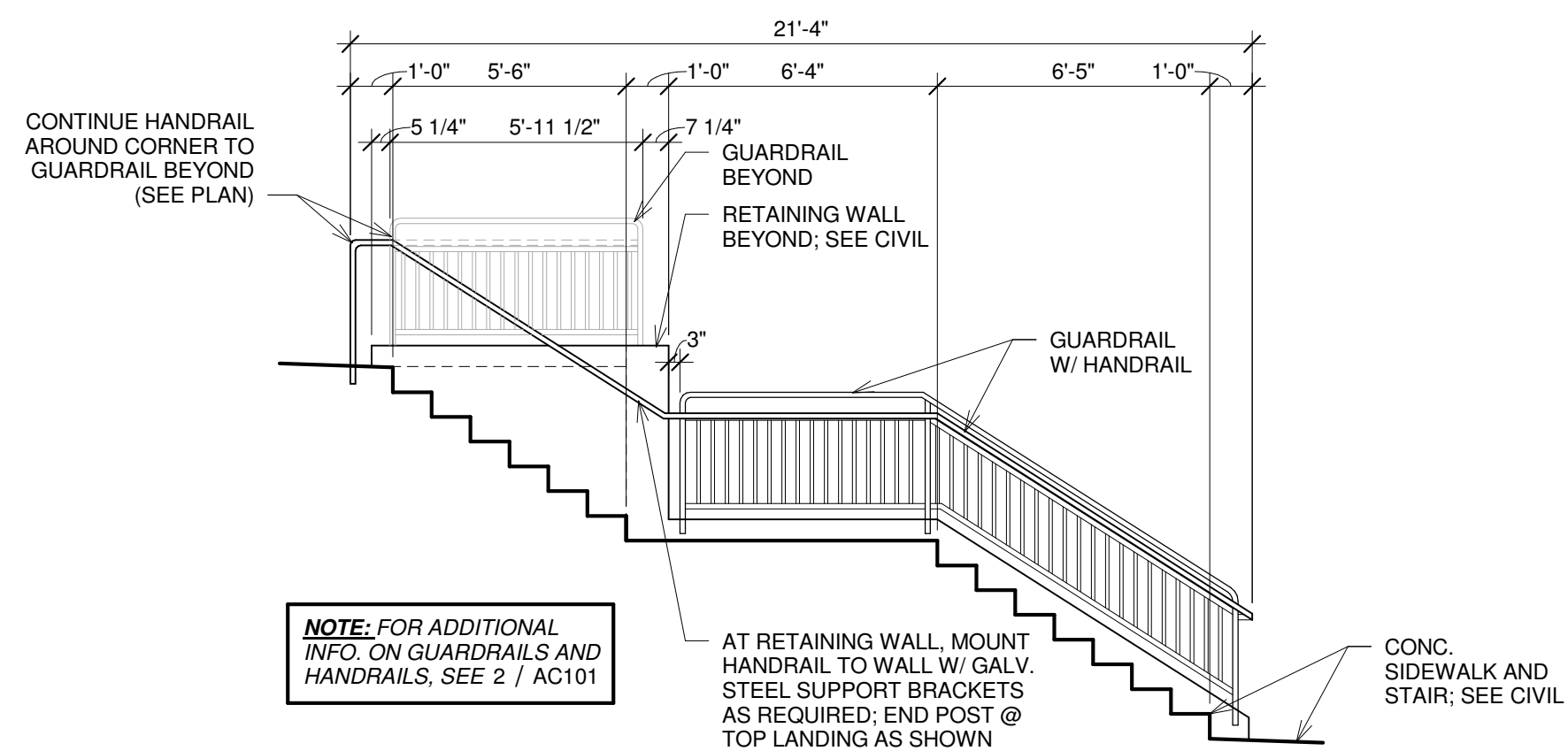
ARCHITECTURAL SITE LAYOUT PLAN AND DETAILS

Drawn By: BTN Checked By: TMH
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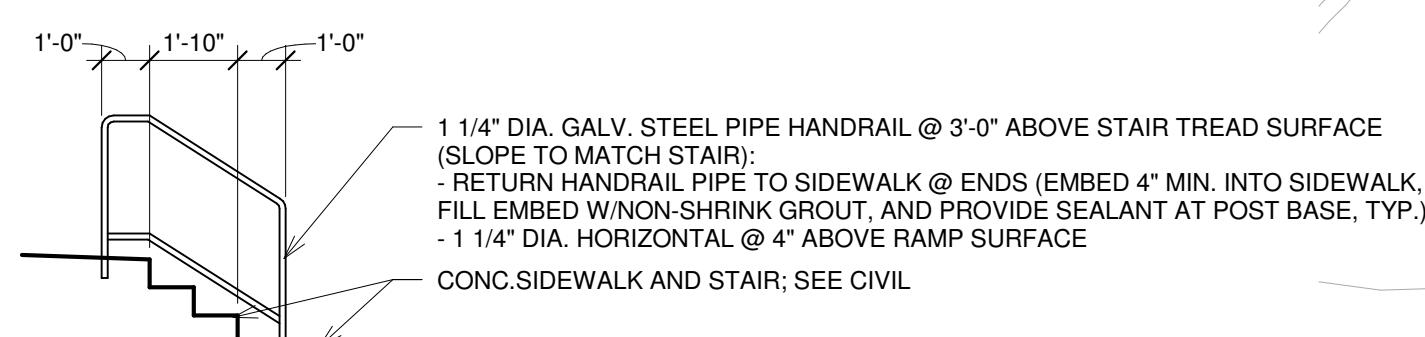
AC101



2 GUARDRAIL ELEVATION
SCALE: 1/4" = 1'-0"

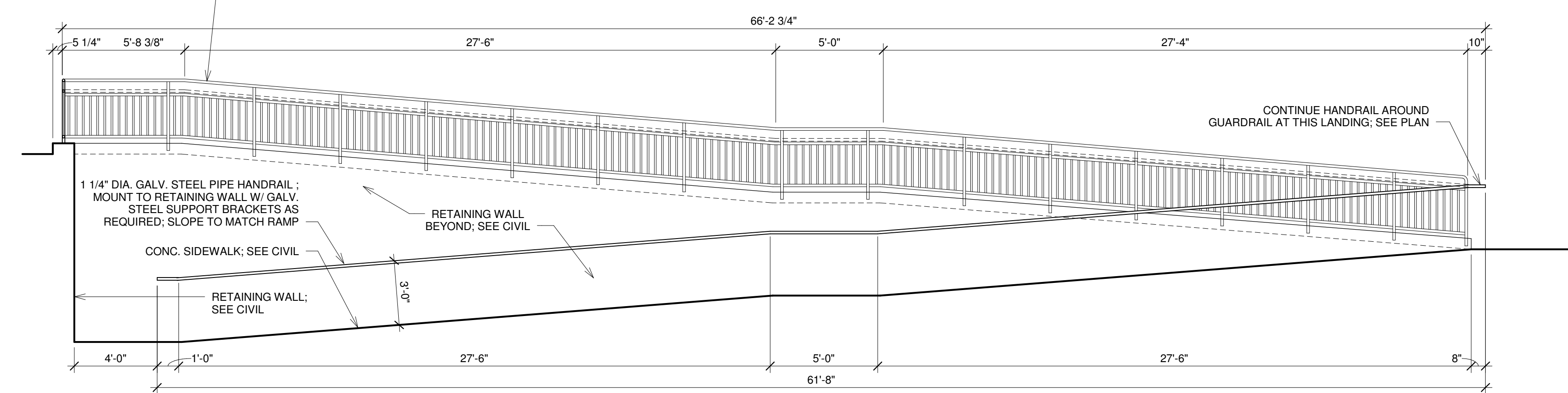


3 GUARDRAIL ELEVATION
SCALE: 1/4" = 1'-0"

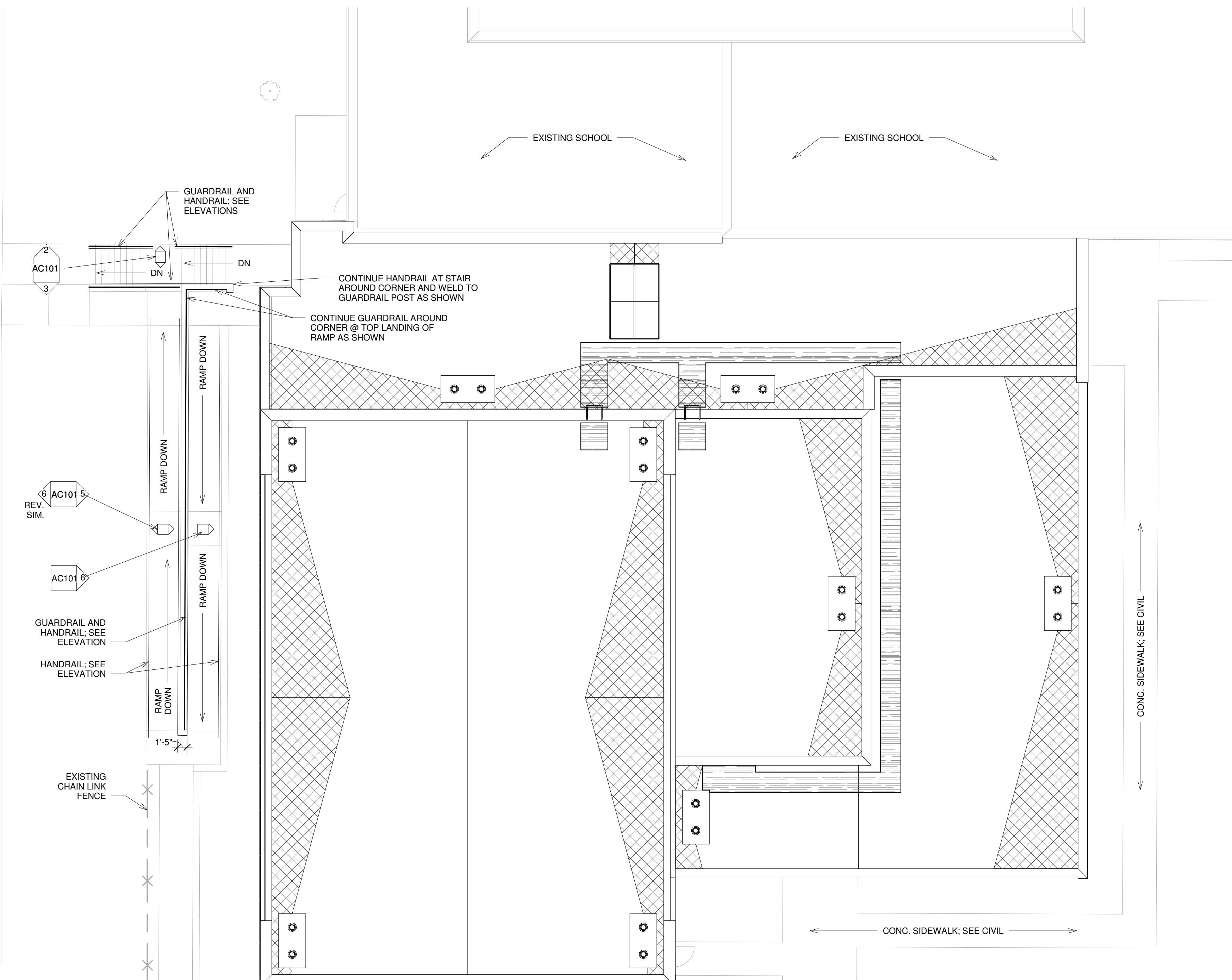


4 HANDRAIL ELEVATION
SCALE: 1/4" = 1'-0"

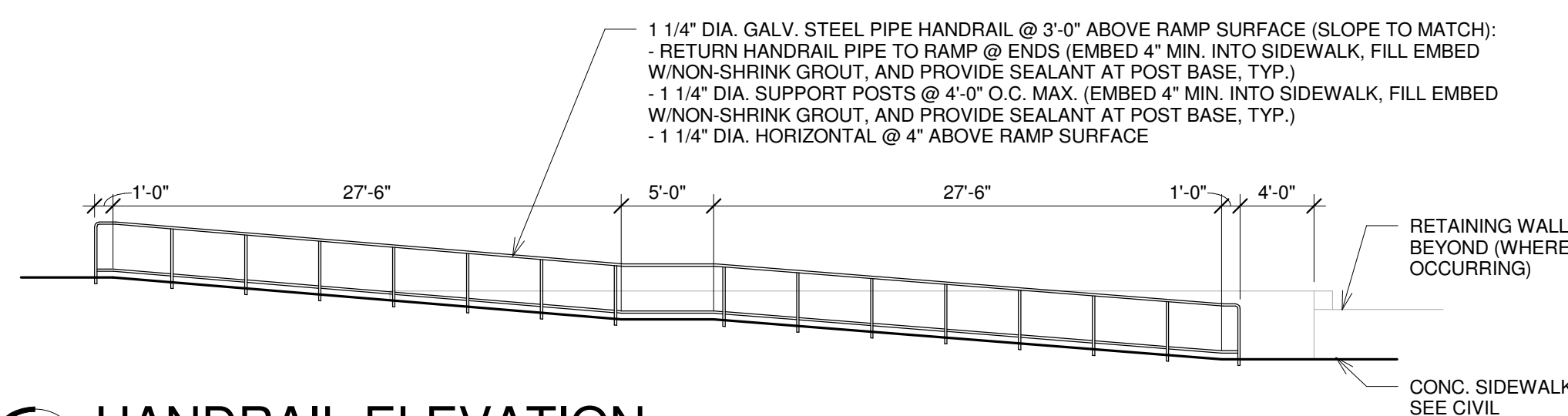
GALV. STEEL PIPE GUARDRAIL (SLOPE TO MATCH RAMP):
- 1 1/4" DIA. END POSTS (EMBED 4" MIN. INTO RETAINING WALL, FILL EMBED W/NON-SHRINK GROUT, AND PROVIDE SEALANT AT POST BASE, TYP.); TOP OF RAIL @ 3'-0" ABOVE RAMP
- 1 1/4" DIA. SUPPORT POSTS @ 4'-0" O.C. (EMBED 4" MIN. INTO RETAINING WALL, FILL EMBED W/NON-SHRINK GROUT, AND PROVIDE SEALANT AT POST BASE, TYP.)
- 1 1/4" DIA. HORIZONTALS @ 4" ABOVE CURB AND 2'-10" ABOVE RAMP SURFACE
- 1" DIA. VERTICALS @ 4" O.C. (TYP.) BETWEEN SUPPORT POSTS
- 1 1/4" DIA. HANDRAIL (SHOWN DASHED BEYOND) @ 3'-0" ABOVE RAMP SURFACE, SLOPE TO MATCH SIDEWALK BELOW; WELD HANDRAIL TO GUARDRAIL W/ 3/4" DIA. SUPPORTS SPACED AS REQ'D.



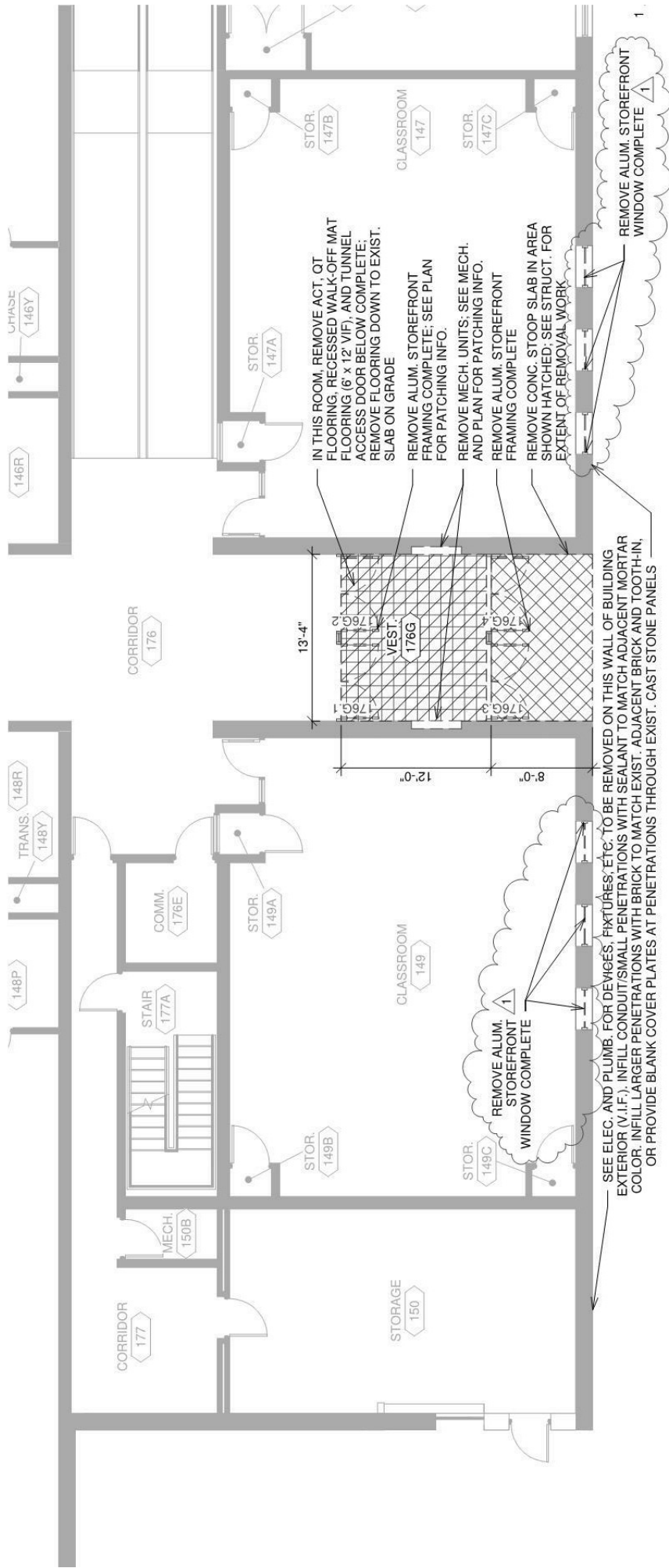
5 GUARDRAIL ELEVATION
SCALE: 1/4" = 1'-0"



1 SITE LAYOUT PLAN
SCALE: 1" = 10'-0"



6 HANDRAIL ELEVATION
SCALE: 1/8" = 1'-0"



ENLARGED FIRST FLOOR DEMOLITION PLAN AT NEW ADDITION

AD002

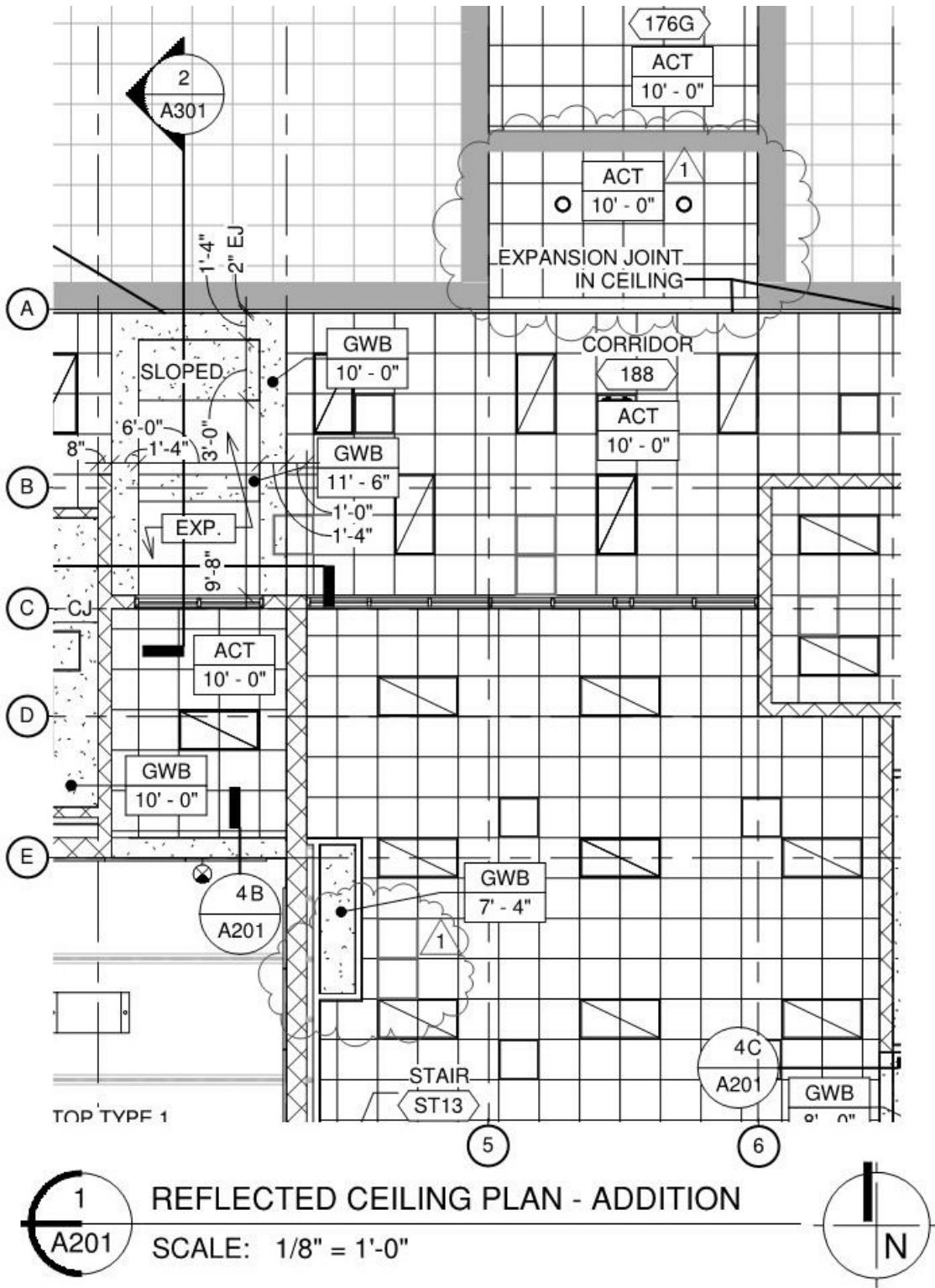
SCALE: 1/8" = 1'-0"

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Project No. 15-2100
Drawn By: BTN Checked By: TMH

Revision : 1
To Sheet: AD002
Issue Date: 01 FEB 2016
Reference: ADDENDUM NO. 1
REMOVE ALUM. STOREFRONT WINDOWS

ASK01



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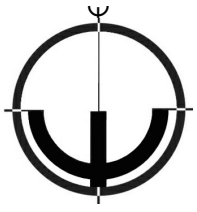
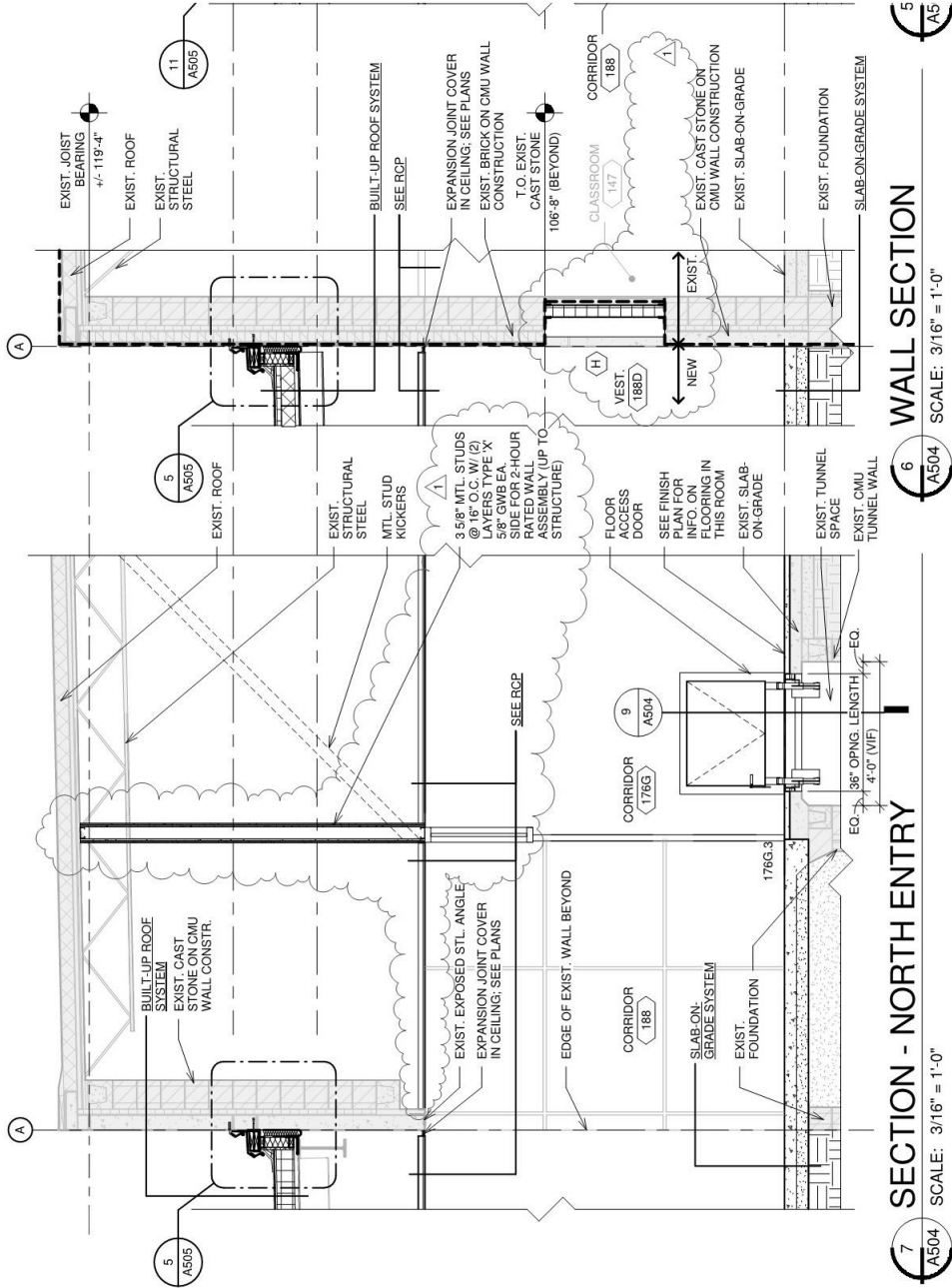
Project No. 15-2100
 Drawn By: BTN Checked By: TMH

Revision : 1
 To Sheet: A201

Issue Date: 01 FEB 2016
 Reference: ADDENDUM NO. 1

UPDATED GRILLE
 LOCATIONS / ADDED
 ACT CEILING

ASK02



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Project No. 15-2100
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Revision : 1
To Sheet: A504

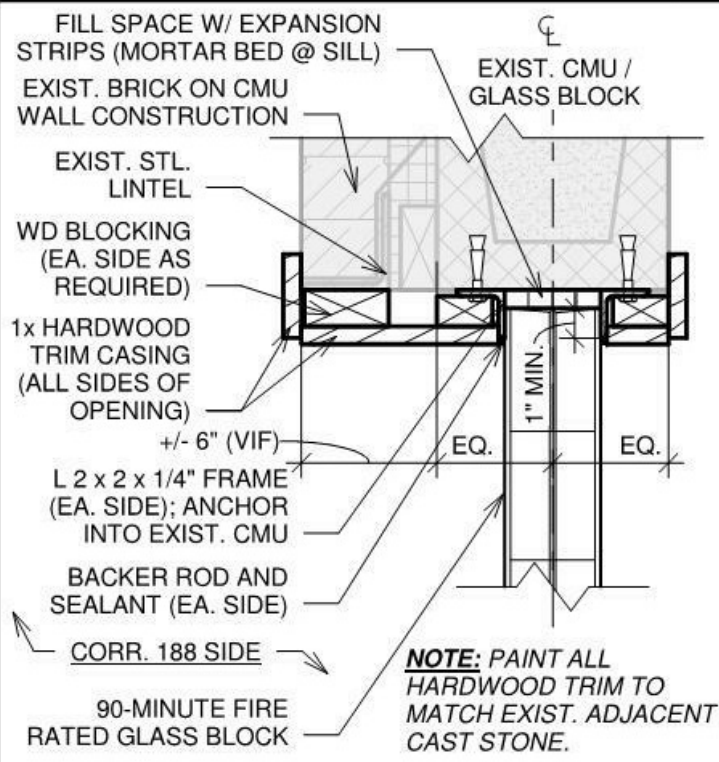
Issue Date: 01 FEB 2016
Reference: ADDENDUM NO. 1

REVISE WINDOW TYPE
'H'

12
A506

STONE

SCALE: 1 1/2" = 1'-0"



NOTE: PAINT ALL HARDWOOD TRIM TO MATCH EXIST. ADJACENT CAST STONE.

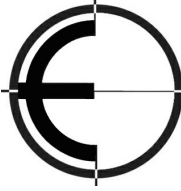
INT. - GLASS BLOCK @ EXIST.

18
A506

SCALE: 1 1/2" = 1'-0"

8
A506

||
J
S



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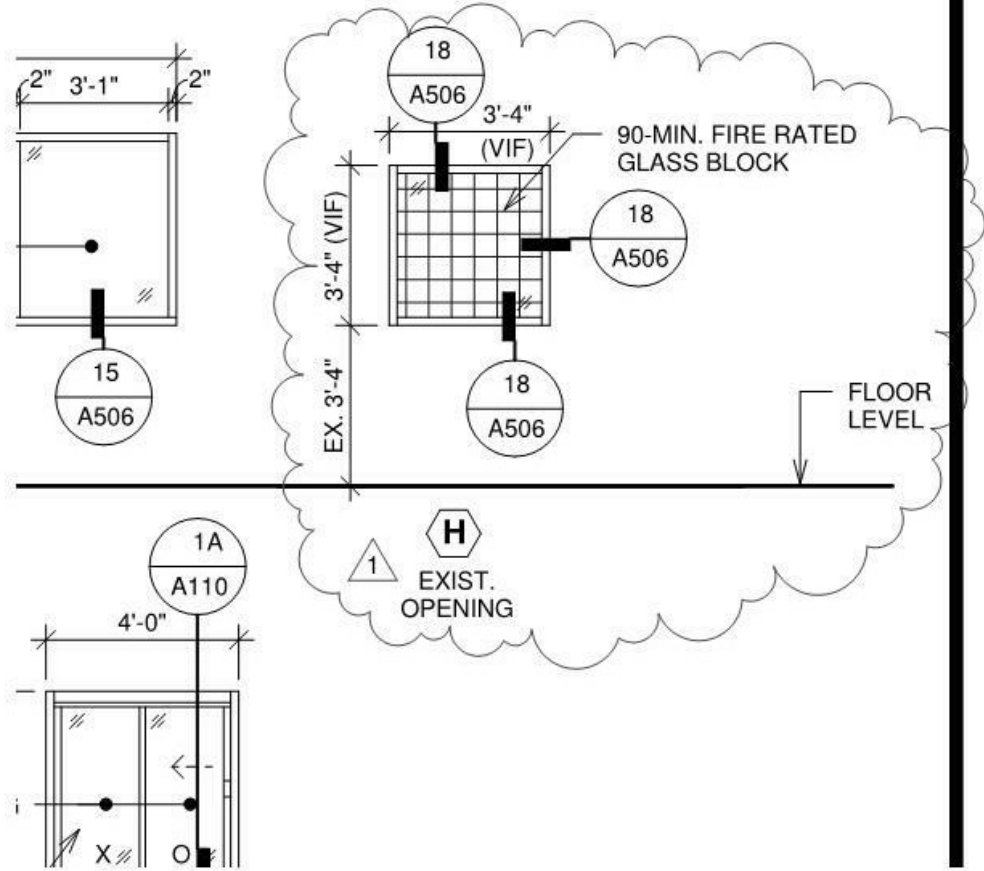
Project No. 15-2100
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Revision : 1
To Sheet: A601

Issue Date: 01 FEB 2016
Reference: ADDENDUM NO. 1

ADDED DETAIL 18

ASK04



2 WINDOW TYPES
A601 SCALE: 1/4" = 1'-0"

ATTACHMENT B:

R.O. Youker (Structural Engineer)

Addendum Items – Revisions to the Drawings

2/1/2016
LPS Park Middle School Addition
ROY Project #15080
Addendum Items

Revisions to the Drawings

Sheet S100

- The following note should be added to the foundation plan:

THE GEOTECHNICAL REPORT HAS PROVIDED RECOMMENDATIONS FOR REMOVAL AND REPLACEMENT OF POOR EXISTING FILL ENCOUNTERED ON SITE, OR FOR THE USE OF GROUND IMPROVEMENT TECHNIQUES SUCH AS RAMMED AGGREGATE PIERS TO ACHIEVE THE PROPER ALLOWABLE SOIL BEARING CAPACITY. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO BID AND PROVIDE THE MORE ECONOMICAL SOLUTION.

Sheet S102

- The steel roof deck at the gymnasium shall be **1.5BA galvanized roof deck** in lieu of 1.5B galvanized roof deck. This applies to the area bound by Grids 1 and 4, and E and H.

End of addendum items



R. O.
YOUKER
INC.

CONSULTING
ENGINEERS

Michael D.
Eisenbarth, P.E., S.E.

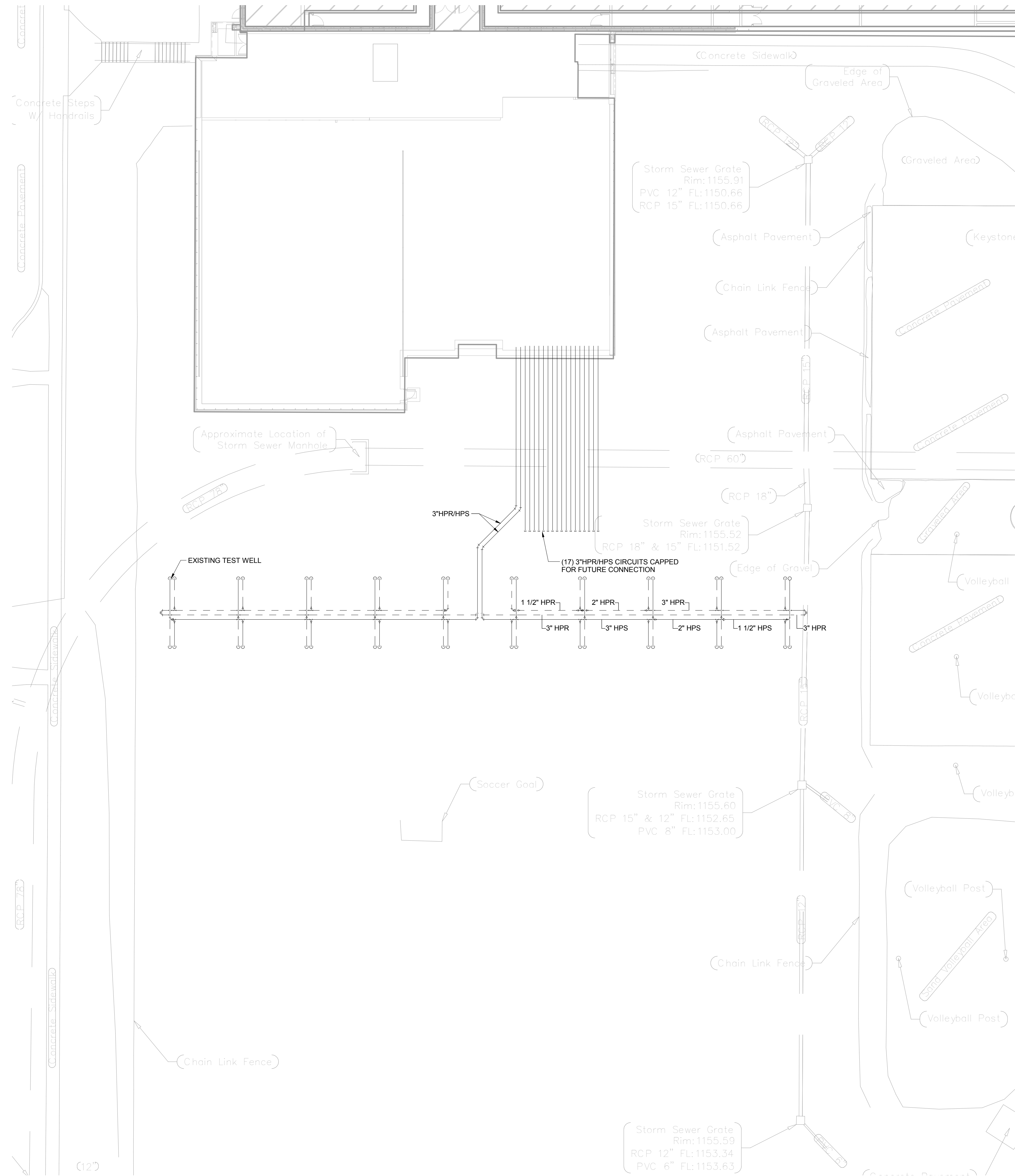
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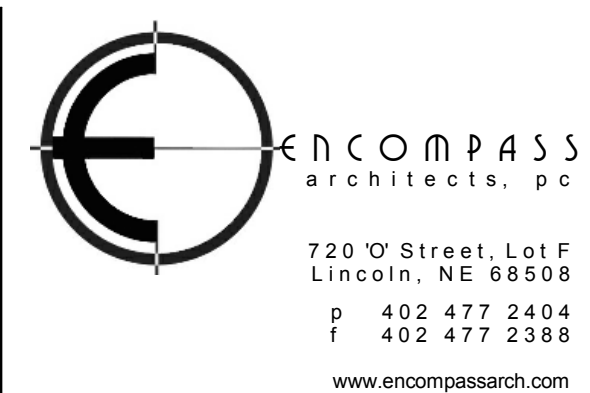
ATTACHMENT C:

ME Group (Mechanical, Electrical, and Plumbing Engineers)

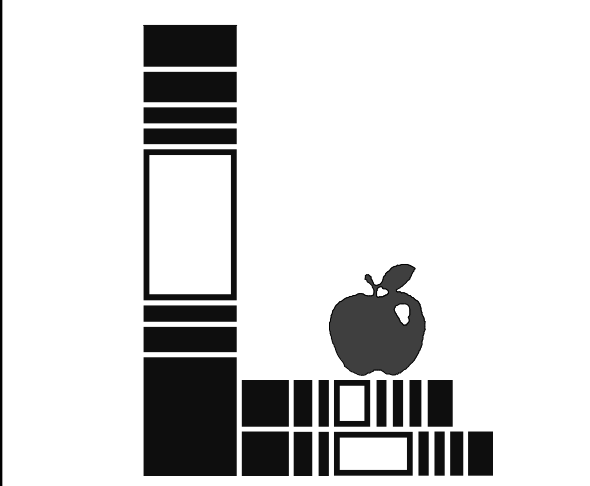
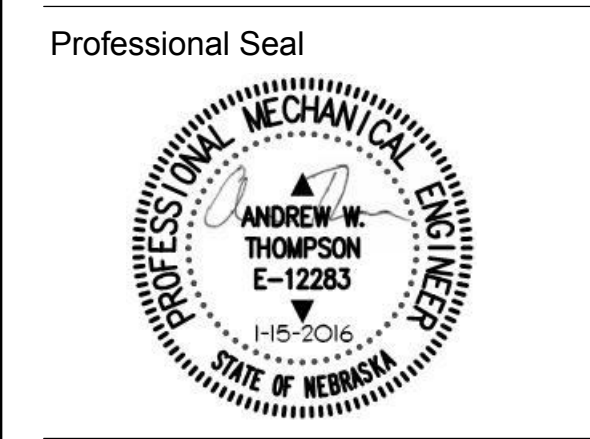
Modification	Sheet Affected
1. M202 – Well Field Site Plan	M202
2. P201 – Enlarged Plumbing Plan	P201
3. E401 – Electrical Schedules	E401



- GENERAL NOTES** (THIS SHEET)
1. GEOTHERMAL BORE HOLE FIELD IS 20 BORE HOLES AT 40' DEEP EACH AND 20'x20' GRID SPACING.
 2. PIPING TO EACH OF (2) BORE HOLE CIRCUITS TO BE SAME AS SIZE SHOWN FOR CIRCUIT #1. HORIZ PIPING TO BORE HOLES TO BE INSTALLED @ 6" BELOW GRADE. COORDINATE INSTALLATION W/ ALL OTHER WATER PIPING AND SITE UTILITIES. ALL DISTURBED AREAS SHALL BE REPLACED TO ORIGINAL CONDITIONS EXCEPT WHERE NOTED. THE PLAY FIELD WILL REQUIRE RESEEDING. THIS PROCESS IS TO BE COMPLETED EARLY IN CONSTRUCTION TO BE ABLE TO PROVIDE A HEALTHY GRASS PLAY FIELD AT SUBSTANTIAL COMPLETION.
 3. AFTER BORE HOLE IS COMPLETED AND PIPE IS INSTALLED IT MUST BE ATTACHED TO A 6" METAL VERTICAL POST.
 4. ALL PIPING MUST BE INSTALLED WITH 14 GAUGE COPPER TRACER WIRE PER SPECIFICATIONS.
 5. INSTALL CAUTION TAPE TO ALL UTILITY PIPING WITHIN 24" OF FINISHED GRADE.
 6. PROVIDE GPS COORDINATES OF WELLS AS PART OF AS-BUILT DRAWINGS.



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01/15/2016
 EA Project No. 15-2100

CONSTRUCTION DOCUMENTS

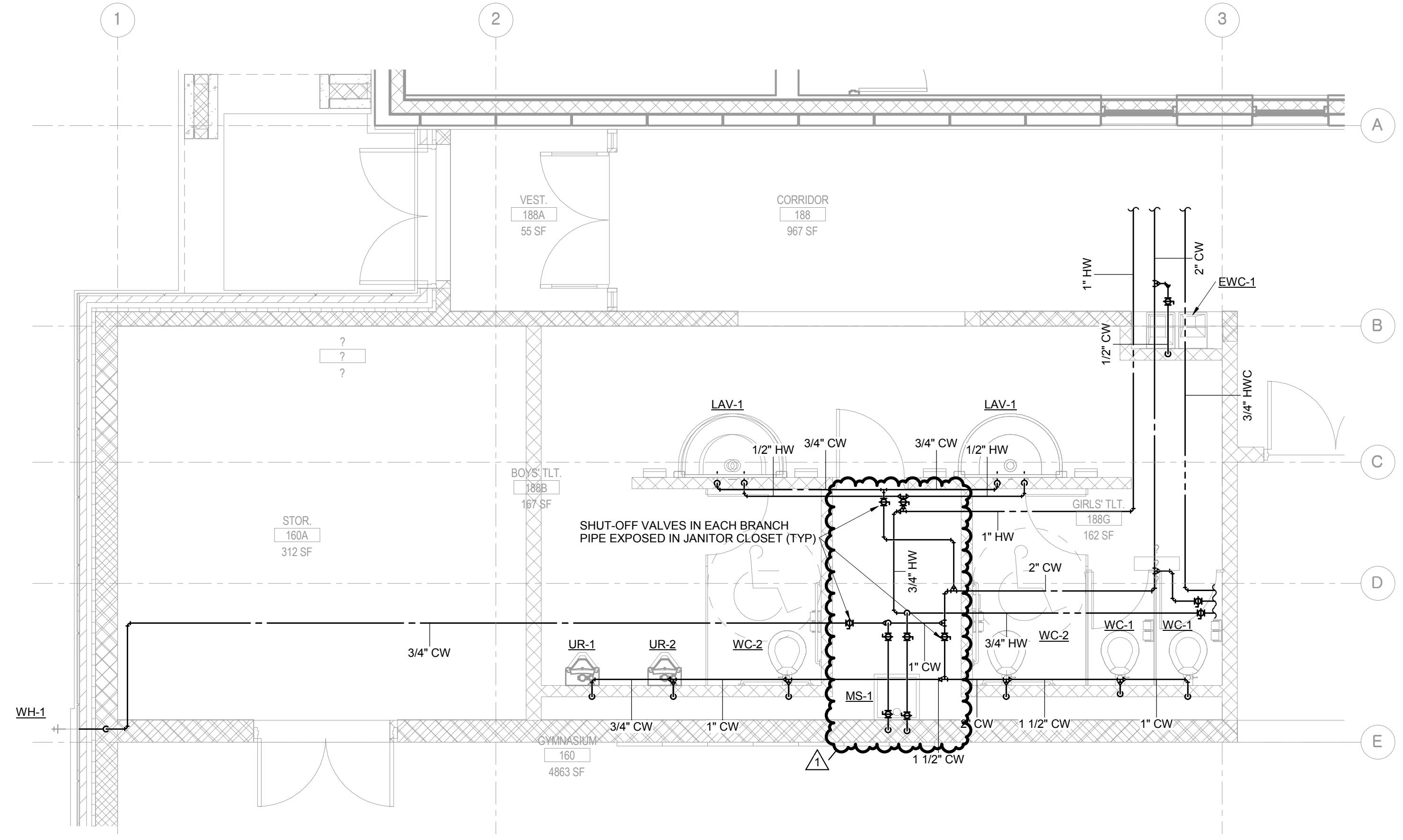
Revisions
 1. ADDENDUM #1 DATE: 01/29/2016

WELL FIELD SITE PLAN

Drawn By: BS Checked By: RC
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M202

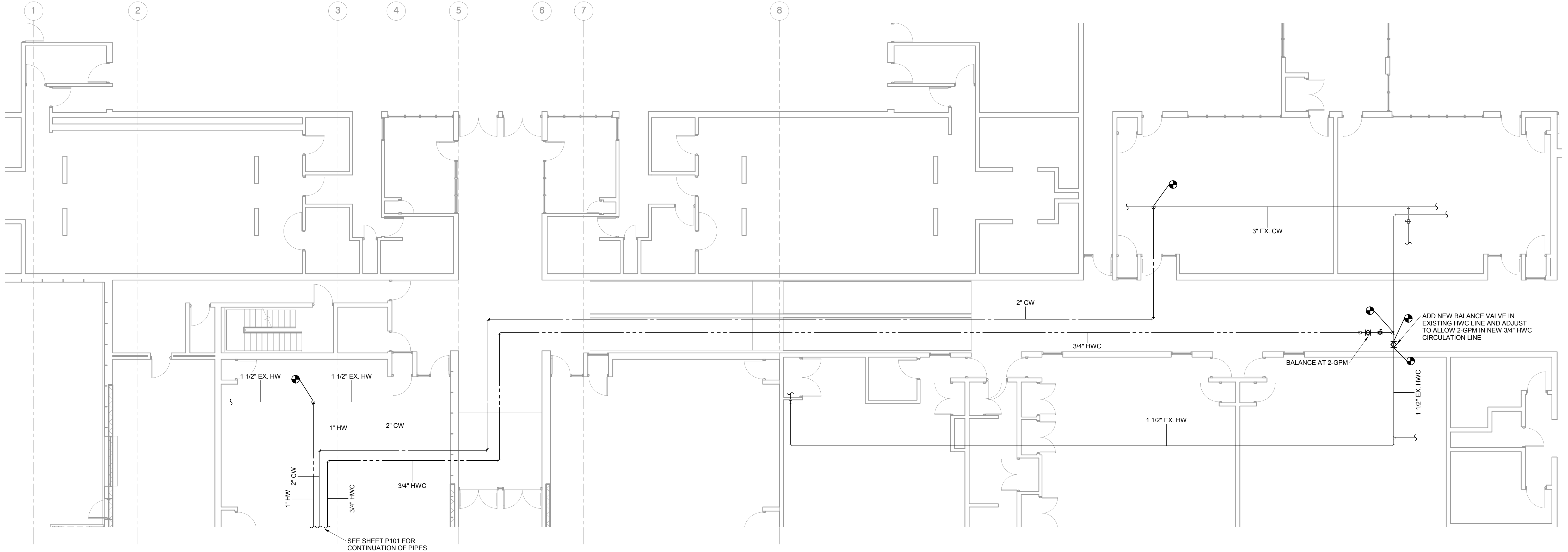
1 WELL FIELD SITE PLAN
 M202 SCALE: 1/16" = 1'-0"



GENERAL NOTES (THIS SHEET)

1. SEE SHEET M001 FOR SYMBOLS, LEGENDS AND GENERAL NOTES

2 ENLARGED PLUMBING PLAN
SCALE: 1/4" = 1'-0"



1 FIRST FLOOR PLUMBING PLAN-EXISTING BLDG AREA
SCALE: 1/8" = 1'-0"

Branch Panel: HP1														
Location: MECH. 288M				Volts: 480/277 Wye				A.I.C. Rating: 42,000						
Supply From: (E) MDP				Phases: 3				Mains Type: MCB						
Mounting: Surface				Wires: 4				Bus Rating: 400 A						
Enclosure: Type 1				MCB Rating: 400 A										
CKT	Circuit Description	Load Class	Trip	Poles	A (VA)	B (VA)	C (VA)	Poles	Trip	Load Class	Circuit Description	CKT		
1	L: MECH. 288M	L	20 A	1	770	661		1	20 A	L	L: RR 188, CUST 188C, STOR 160A	2		
3	L: COMMONS 188E, CORR 188	L	20 A	1		160	824		1	20 A	L: MULTIPURP 163, MECH 188M	4		
5	L: MULTIPURP 162, ADMIN 161	L	20 A	1			846	4648				6		
7	HP-188B: MECH 288M	E	20 A	1	3878	4648			3	25 A	E	HP-160A: MECH. 288M	8	
9						4648	4648					10		
11	HP-160B: MECH. 288M	E	25 A	3			4648	0		3	15 A	E	HP-188EA: MECH. 288M	12
13					4648	0						14		
15						2975	0					16		
17	HP-188EB: MECH 288M	E	15 A	3			2975	2975				18		
19					2975	2975			3	15 A	E	HP-112: MECH. 288M	20	
21						3585	2975					22		
23	HP-162: MECH. 288M	E	15 A	3			3585	2975				24		
25					3585	2975			3	15 A	E	HP-161: MECH. 288M	26	
27	L: COMMONS 188E	L	20 A	1		916	2975					28		
29	L: GYMNASIUM 160	L	20 A	1			3184	3048				30		
31					9034	3048			3	20 A	M	HPP-2: MECH 188M	32	
33	ERV-1: MECH 288M	E	50 A	3		9034	3048					34		
35							9034	0	1	0 A	--	36		
37					3048	7240						38		
39	HPP-1: MECH 188M	M	20 A	3		3048	6500		3	100 A	R; E; M; A	PANEL LP1 THRU T-LP1	40	
41							3048	7760				42		
43	SPARE	--	0 A	1	0	0			1	0 A	--	SPARE	44	
45	SPARE	--	0 A	1		0	0		1	0 A	--	SPARE	46	
47	SPARE	--	0 A	1			0	0	1	0 A	--	SPARE	48	
49	SPARE	--	0 A	1	0	0			1	0 A	--	SPARE	50	
51	SPARE	--	0 A	1		0	0		1	0 A	--	SPARE	52	
53	SPARE	--	0 A	1			0	0	1	0 A	--	SPARE	54	
55	SPARE	--	0 A	1	0	0			1	0 A	--	SPARE	56	
57	SPARE	--	0 A	1		0	0		1	0 A	--	SPARE	58	
59	SPARE	--	0 A	1			0	0	1	0 A	--	SPARE	60	
Total Load:					49485 VA	45336 VA	48726 VA							
Total Amps:					181 A	164 A	178 A							
Phase Balance					92 % A-B	93 % B-C	98 % C-A							
Load Classification		Connected Load	Demand Factor	Estimated Demand	Panel Totals									
L	Lighting	7361 VA	125.00%	9202 VA										
C	Continuous				Total Conn. Load: 143946 VA									
R	Receptacle	13140 VA	88.05%	11570 VA	Total Est. Demand: 151042 VA									
M	Motor	18650 VA	150.00%	27975 VA	Total Conn.: 173 A									
LM	Largest Motor				Total Est. Demand: 182 A									
E	Equipment	98395 VA	100.00%	98395 VA	Spare Capacity: 218 A									
A	Appliance	6000 VA	65.00%	3900 VA										

Branch Panel: HE1													
Location: MECH. 288M				Volts: 480/277 Wye				A.I.C. Rating: 42,000					
Supply From: (E) EM				Phases: 3				Mains Type: MCB					
Mounting: Surface				Wires: 4				Bus Rating: 100 A					
Enclosure: Type 1				MCB Rating: 100 A									
CKT	Circuit Description	Load Class	Trip	Poles	A (VA)	B (VA)	C (VA)	Poles	Trip	Load Class	Circuit Description	CKT	
1	L: MECH. 288M	L	20 A	1	126	1187		1	20 A	L	L: GYMNASIUM 160	2	
3	SPARE	--	0 A	1		0	402		1	20 A	L	L: EXTERIOR	4
5	SPARE	--	20 A	1			0	0	1	20 A	--	SPARE	6
7	SPARE	--	20 A	1	0	0			1	20 A	--	SPARE	8
9	SPARE	--	20 A	1		0	0		1	20 A	--	SPARE	10
11	SPARE	--	--	--			0	0	--	--	--	SPARE	12
13	SPARE	--	--	--	0	0			--	--	--	SPARE	14
15	SPARE	--	--	--		0	0		--	--	--	SPARE	16
17	SPARE	--	--	--			0	0	--	--	--	SPARE	18
19	SPARE	--	--	--	0	0			--	--	--	SPARE	20
21	SPARE	--	--	--		0	0		--	--	--	SPARE	22
23	SPARE	--	--	--			0	0	--	--	--	SPARE	24
25	SPARE	--	--	--	0	0			--	--	--	SPARE	26
27	SPARE	--	--	--			0	0	--	--	--	SPARE	28
29	SPARE	--	--	--			0	0	--	--	--	SPARE	30
31	SPARE	--	--	--	0	0			--	--	--	SPARE	32
33	SPARE	--	--	--			0	0	--	--	--	SPARE	34
35	SPARE	--	--	--			0	0	--	--	--	SPARE	36
37	SPARE	--	--	--	0	9393			3	70 A	R; E	PANEL LE1 THRU T-LE1	38
39	SPARE	--	--	--			0	9393				40	
41	SPARE	--	--	--			0	3718				42	
Total Load:					10707 VA	9795 VA	3718 VA						
Total Amps:					42 A	39 A	13 A						
Phase Balance					91 % A-B	38 % B-C	35 % C-A						
Load Classification		Connected Load	Demand Factor	Estimated Demand	Panel Totals								
L	Lighting	1715 VA	125.00%	2144 VA									
C	Continuous				Total Conn. Load: 24220 VA								
R	Receptacle	720 VA	100.00%	720 VA	Total Est. Demand: 24649 VA								
M	Motor				Total Conn.: 29 A								
LM	Largest Motor				Total Est. Demand: 30 A								
E	Equipment	21784 VA	100.00%	21784 VA	Spare Capacity: 70 A								
A	Appliance												

Branch Panel: LP1														
Location: MECH. 288M				Volts: 120/208 Wye				A.I.C. Rating: 22,000						
Supply From: T-LP1				Phases: 3				Mains Type: MLO						
Mounting: Surface				Wires: 4				Bus Rating: 200 A						
Enclosure: Type 1														
CKT	Circuit Description	Load Class	Trip	Poles	A (VA)	B (VA)	C (VA)	Poles	Trip	Load Class	Circuit Description	CKT		
1	R: COMMONS 188E	R	20 A	1	900	0		1	0 A	--	SPARE	2		
3	R: COMMONS 188E	R	20 A	1		720	720		1	20 A	R	R: MULTIPURPOSE 112 & 113	4	
5	R: MULTIPURPOSE 113	R	20 A	1			900	900	1	20 A	R	R: MULTIPURPOSE 112	6	
7	R: MULTIPURPOSE 112 & 113	R	20 A	1	360	180			1	20 A	R	SCOREBOARD: GYMNASIUM 106	8	
9	SCOREBOARD: GYMNASIUM 106	R	20 A	1			0	1080	1	20 A	R	R: GYMNASIUM 106	10	
11	R: GYMNASIUM 106	R	20 A	1				720	900	1	20 A	R	R: STOR. 107	12
13	HAND DRYER: BOYS TLT 104	A	20 A	1	1000	1000			1	20 A	E	WASHING STATION: BOYS TLT 104	14	
15	HAND DRYER: BOYS TLT 104	A	20 A	1		1000	1000		1	20 A	A	HAND DRYER: GIRLS TLT 105	16	
17	WASHING STATION: GIRLS TLT...	E	20 A	1			1000	1000	1	20 A	A	HAND DRYER: GIRLS TLT 105	18	
19	EW: CORR 101 (GFCI BREAKER)	A	20 A	1	1000	1000			1	20 A	A	EW: CORR 101 (GFCI BREAKER)	20	
21	R: COMMONS 188E	R	20 A	1		360	900		1	20 A	R	R: CORRIDOR 188	22	
23	R: ADMIN 161	R	20 A	1			900	1440	1	20 A	R	R: ADMIN 161	24	
25	R: MECH 288M	R	20 A	1	900	720			1	20 A	R	R: COMMONS 188E	26	
27	R: MECH 188M	R	20 A	1		540	180		1	20 A	R; M	MOTORIZED BACKBOARD: GYM	28	
29	IS-1: MECH 188M	E	20 A	1			0	0	1	0 A	--	SPARE	30	
31	MOTORIZED BACKBOARD: GYM	R; M	20 A	1	180	0			1	0 A	--	SPARE	32	
33	SPARE	--	0 A	1		0	0		1	0 A	--	SPARE	34	
35	SPARE	--	0 A	1			0	0	1	0 A	--	SPARE	36	
37	SPARE	--	0 A	1	0	0			1	0 A	--	SPARE	38	
39	SPARE	--	0 A	1			0	0	1	0 A	--	SPARE	40	
41	SPARE	--	0 A	1				0	1	0 A	--	SPARE	42	
Total Load:					7240 VA	6500 VA	7760 VA							
Total Amps:					61 A	54 A	66 A							
Phase Balance					90 % A-B	84 % B-C	93 % C-A							
Load Classification		Connected Load	Demand Factor	Estimated Demand	Panel Totals									
L	Lighting													
C	Continuous				Total Conn. Load: 21500 VA									
R	Receptacle	13140 VA	88.05%	11570 VA	Total Est. Demand: 18010 VA									
M	Motor	360 VA	150.00%	540 VA	Total Conn.: 60 A									
LM	Largest Motor				Total Est. Demand: 50 A									
E	Equipment	2000 VA	100.00%	2000 VA	Spare Capacity: 150 A									
A	Appliance	6000 VA	65.00%	3900 VA										

Branch Panel: LE1													
Location: MECH. 288M				Volts: 120/208 Wye				A.I.C. Rating: 22,000					
Supply From: T-LE1				Phases: 3				Mains Type: MLO					
Mounting: Surface				Wires: 4				Bus Rating: 100 A					
Enclosure: Type 1													
CKT	Circuit Description	Load Class	Trip	Poles	A (VA)	B (VA)	C (VA)	Poles	Trip	Load Class	Circuit Description	CKT	
1	EUH-188F: VEST 188F	E	25 A	2	1799	1799			2	25 A	E	EUH-188D: VEST 188D	2
3						1799	1799					4	
5	ACCESS CONTROL: VEST 188D	R	20 A	1			360	360	1	20 A	R	ACCESS CONTROL: VEST 188A	6
7	EUH-188A: VEST. 188A	E	25 A	2	1799	1498			2	20 A	E	EUH-111: MECH. 188M	8
9						1799	1498					10	
11							2498	500	1	20 A	E	BMS PANEL: MECH 288M	12
13	EUH-288M: MECH. 288M	E	25 A	3	2498	0			1	20 A	--	SPARE	14
15													

ATTACHMENT D:

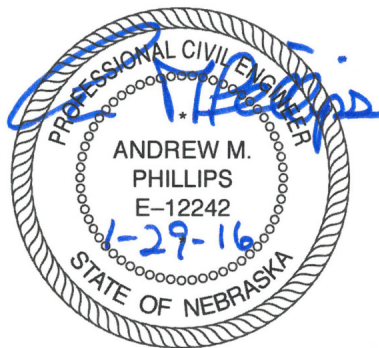
Report of Geotechnical Exploration (Olsson Associates, Geotechnical Engineer)

REPORT OF GEOTECHNICAL EXPLORATION

PARK MIDDLE SCHOOL ADDITION 855 SOUTH 8TH STREET LINCOLN, NEBRASKA

PREPARED FOR
LINCOLN PUBLIC SCHOOLS

PREPARED BY
OLSSON ASSOCIATES



January 29, 2016

OLSSON PROJECT No: 015-3515

601 P Street, Suite 200, Lincoln, NE • (402) 474-6311 • FAX (402) 474-5160



Date: January 29, 2016

Lincoln Public Schools
Attn: Brian TeKolste
800 S.24th Street
Lincoln, Nebraska 68510

RE: Geotechnical Exploration
Park Middle School Addition
Lincoln, Nebraska
Olsson Project No. 015-3515

Dear Mr. TeKolste:

Olsson Associates has completed the authorized geotechnical exploration for the above referenced project. The geotechnical exploration was conducted to evaluate physical characteristics of subsurface conditions with respect to design and construction of this project. The enclosed report summarizes the project characteristics as we understand them, presents the findings of the borings and laboratory tests, discusses the observed subsurface conditions, and provides geotechnical engineering recommendations for this project.

We appreciate the opportunity to provide our geotechnical engineering services for this project. If you have any questions or need further assistance, please contact us at your convenience. We are also staffed and equipped to provide construction testing and inspection services on this project as well.

Respectfully submitted,
Olsson Associates

Prepared by:

A handwritten signature in blue ink, appearing to read 'Nick Menefee', written in a cursive style.

Nicholas A. Menefee, E.I.
Assistant Engineer
402.458.5963

Reviewed by:

A handwritten signature in blue ink, appearing to read 'Andrew M. Phillips', written in a cursive style.

Andrew M. Phillips, P.E.
Geotechnical Engineer
402.458.5625

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APPENDICES

- Appendix A: Site Location Plan, Boring Location Map
- Appendix B: Symbols and Nomenclature, Boring Logs
- Appendix C: Summary of Laboratory Test Results

A. PROJECT UNDERSTANDING

A.1. GEOTECHNICAL SCOPE

This report presents the results of the geotechnical subsurface exploration performed for the proposed addition to the existing Park Middle School building in Lincoln, Nebraska.

The purpose of this exploration was to evaluate the subsurface conditions and provide recommendations regarding the design of foundations and floor slabs for the proposed building addition. We have completed the following scope of services for this project:

- Performed a site reconnaissance and reviewed geologic subsurface conditions.
- Drilled four (4) soil test borings to a depth ranging from 15 to 20 feet within the proposed building addition area.
- Performed laboratory tests on selected soils samples obtained during drilling operations.
- Conducted a geotechnical engineering evaluation using information obtained from our observations, soil test borings and laboratory tests, and information available regarding the proposed construction.
- Preparation of this Report of Geotechnical Exploration presenting the soil test borings, laboratory test results and a summary of our engineering evaluations and recommendations.

The scope of this exploration did not include any environmental assessment for the presence of wetlands and/or hazardous or toxic materials in the soil or groundwater on or near the site. Any statements in this report regarding odors, discoloration, or suspicious conditions are strictly for the information of our client.

A.2. SITE LOCATION AND DESCRIPTION

The proposed building addition will be located on the southwest side of the existing Park Middle School located at 855 South 8th Street Lincoln, Nebraska. At the time of our field exploration, the site consisted of grass vegetation, gravel surfacing, and concrete sidewalks that was accessible with a truck-mounted drill rig. The majority of the site was most recently utilized as an existing recreational field for Park Middle School. The approximate location of the proposed building addition is depicted on the Boring Location Map included in *Appendix A*.

A.3. PROJECT INFORMATION

The proposed construction will consist of an approximately 2,100 square foot building addition on the southwest side of the existing school. It was assumed that no portion of the proposed building addition would include a basement. The approximate location of the proposed building addition is depicted on the Boring Location Map included in *Appendix A*.

According to the topographic information provided by **Encompass Architects**, the existing site grades in the area of the proposed addition range from a low elevation of 1156.5 on the west side of the site to a high elevation of 1161.5 on the northeast side of the site. It appears previous grading operations involved placement of significant amounts of fill across the project site. The finished floor elevation (FFE) of the building addition was assumed to be at approximately 1161.25 to match the existing school FFE. Based upon the assumed FFE, grading operation within the proposed building addition are anticipated to include a maximum structural fill depth of 5.0 feet and minimal (less than one foot) of excavation is necessary to achieve the design grades within the building addition area.

Structural design loads were provided by **R.O. Youker Inc.** to include a maximum column and continuous wall loads for the proposed addition of 60 kips and 5 kips per linear foot, respectively. If the structural design loads exceed the provided values listed above, **Olsson** should be contacted to determine if the recommendation contained in this report remain valid.

B. EXPLORATORY AND TEST PROCEDURES

B.1. FIELD EXPLORATION

The field exploration program consisted of performing 4 soil test borings at the locations depicted on the Boring Location Plan presented in *Appendix A*. Since soil test boring B-3 was terminated in existing fill, soil test boring B-3A was completed to observe the depth of the existing fill. The ground surface elevations at the boring locations were interpreted from a topographic map provided by **Encompass Architects**. The surface elevations at the boring locations were rounded to the nearest half foot and are presented on the boring logs.

The soil test borings were extended to depths ranging from 15 to 20 feet below the existing ground surface with a truck-mounted drill rig using continuous-flight augers. Soil samples were obtained at selected intervals in the soil test borings. Soil samples designated as “U” samples on the boring logs were obtained in using Thin-Walled Tube Sampling techniques. Soil samples designated as “SS” samples were obtained during Penetration Test using a Split-Spoon Barrel sampler. Recovered samples were sealed in containers, labeled, and protected for transportation to the laboratory for testing.

B.2. LABORATORY TESTING

Descriptions of the soils encountered in the soil test borings were prepared using Visual-Manual Procedures for Descriptions and Identification of Soils. Laboratory tests were also performed to evaluate the engineering properties for the recovered soil samples. Moisture content tests and density determinations were used to determine the existing moisture/density condition of the soils. Unconfined compression tests were used to help define the stress-strain characteristics and related shear strength of the cohesive soils. Two Atterberg limits tests were conducted to aid in the classification of the soils under the Unified Classification System and to indicate the shrink/swell potential of the soils. One consolidation test was conducted to determine the potential settlement of the proposed addition. One standard Proctor test was performed on a bulk sample of the fill material to indicate the maximum dry density and optimum moisture content. A summary of the laboratory test results is presented in *Appendix C*.

C. SUBSURFACE CONDITIONS

C.1. AREA GEOLOGY

The site lies in the Hillslopes and Floodplains regions of Nebraska at the interface of the Urban land – Pawnee-Mayberry complex, Urban land – Wymore-Aksarben complex, and Urban land – Kennebec complex. These soils are known to be sloping at 0 to 7 percent, moderately well to well drained, and have a moderately low to high permeability.

C.2. TEST BORINGS AND LABORATORY SUMMARY

The generalized subsurface profile for this site, in descending order, generally consisted of grass vegetation, concrete, or gravel surfacing overlying fill and alluvium material. Specific soil descriptions are noted in more detail on the Soil Test Boring Logs in *Appendix B*.

Developed Zone

A developed zone with approximately 2.0 inches of topsoil was encountered in soil test boring B-2 which consisted of varying amounts of organics and roots. Organic material is typically considered unsuitable for structural support or for use as structural fill due to its high organic content. It should be noted that the developed zone encountered in the soil test borings is to be stripped and stockpiled outside of the construction area prior to the placement of structural fill.

Concrete

Existing concrete was encountered in soil test boring B-1 and extended to a depth of 3.0 inches below the existing ground surface. It should be noted that the concrete encountered in the soil test borings should be removed from the construction area prior to grading operations.

Gravel Surfacing

Gravel surfacing, approximately 1.0 inches thick, was encountered in soil test boring B-3 and B-3A. It should be noted that the gravel surfacing encountered in the soil test borings should be removed from the construction area prior to grading operations.

Fill (Cohesive)

Existing cohesive fill was encountered in each of the soil test borings and extended to depths ranging from 8.5 feet below the existing ground surface elevation to the base of the soil test boring. Soil identified as existing cohesive fill were generally soft to stiff, light yellowish brown to dark brown, dry to wet, mostly lean clay to lean to fat clay with varying amounts of fine to coarse sand, iron staining, and glass. Laboratory tests on recovered samples from this stratum depicted a

moisture content ranging from 7.5 to 28.1 percent, dry densities ranging from 78.7 to 105.2 pounds per cubic foot (pcf), and an unconfined compression strength value of 1.3 tons per square foot (tsf). Atterberg limits tests performed on sample of the existing cohesive fill material indicated a liquid limit range of 29 to 33 and a plasticity index range of 16 to 17. A standard proctor test performed on a bulk sample of the existing cohesive fill indicated a maximum dry density of 113.4 pcf at an optimum moisture content of 15.0 percent. The unconfined compressive strength value indicated a stiff consistency for the existing cohesive fill material.

Fill (Cohesionless)

Existing cohesionless fill was encountered in each of the soil test borings and extended to depths ranging from 3.5 to 13.5 feet below the existing ground surface elevation. Soil identified as existing cohesionless fill were generally loose to dense, light yellowish brown to dark brown, dry to dry to moist, mostly fine to medium sand with varying amounts of clay, silt, and brick rubble. Laboratory tests on recovered samples from this stratum depicted a moisture content ranging from 9.0 to 15.6 percent, dry densities ranging from 70.5 to 114.4 pcf, and P-200 values ranging from 26.3 to 42.0 percent passing through the #200 sieve.

Alluvium

Alluvium was encountered in soil test borings B-1, B-2, B-3A, and extended to the base of the soil test borings. Soils identified as alluvium were generally firm to stiff, light to dark greyish brown, moist to wet, mostly lean clay with varying amounts of silt, fine sand, and iron staining. Laboratory tests on recovered samples from this stratum depicted a moisture content range of 22.6 to 32.4 percent, dry densities ranging from 87.7 to 102.3 pcf, and an unconfined compressive strength value of 1.0 tsf. The standard penetration resistance “N” value obtained in the alluvium was 7 blows per foot (bpf). The standard penetration resistance “N” values and unconfined compressive strength value indicated a firm to stiff consistency for the alluvium material.

C.3. GROUNDWATER SUMMARY

Groundwater was encountered in the soil test borings as summarized in Table 1. The dates, conditions and depths of the groundwater table are noted in more detail on the Soil Test Boring Logs in *Appendix B*. Groundwater levels will fluctuate depending on seasonal variations of precipitation and other factors that may occur at higher elevations at some time in the future. **Section D.4** of this report will address any site drainage concerns with water elevations in this region.

TABLE 1
GROUNDWATER MEASUREMENTS

Boring No.	Groundwater Depth During Drilling (Feet)	Groundwater Elevation During Drilling	Groundwater Depth Immediately After Drilling (Feet)	Groundwater Elevation Immediately After Drilling	Groundwater Depth 24 Hours After Drilling (Feet)	Groundwater Elevation 24 Hours After Drilling
B-1	18.0	1143.0	18.2	1142.8	16.9	1144.1
B-2	13.5	1144.0	13.5	1144.0	13.1	1144.4
B-3	14.0	1143.5	14.5	1143.0	13.2	1144.3
B-3A	13.0	1144.5	13.9	1143.6	NP	NA

NA- Not Applicable; NP- Not Performed

D. SITE PREPARATION

D.1. GENERAL SITE PREPARATIONS

In all new fill and excavation areas, vegetation, topsoil (typically 2.0 inches thick), concrete (typically 3.0 inches thick), gravel surfacing (typically 1.0 inches thick), roots and other deleterious materials deemed unsuitable by the full-time field observer shall be removed from the proposed construction area, and replaced with controlled fill. Site clearing, grubbing, and stripping will need to be performed only during dry weather conditions. Operations of heavy equipment on the site during wet conditions could result in excessive rutting and mixing of organic debris with the underlying soils.

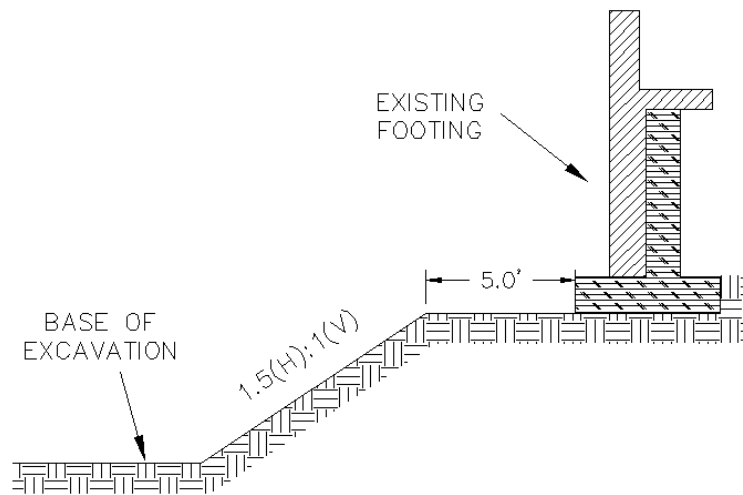
Based on the laboratory testing and site observations made during drilling observations, the existing fill soils encountered were found to be variable in density and moisture content and will not be suitable for the support of the proposed building addition. Therefore, we recommend either Option 1; overexcavating the existing fill material and partially supporting the building addition on an intermediate foundation system or Option 2; leaving the existing fill and supporting the building addition footings and floor slab on an intermediate foundation system. Site preparation recommendations for both the core-out option and intermediate foundation system option are located below.

Option 1: Core-Out

Due to the existing fill soils encountered being variable in density and moisture content, we recommend overexcavating the existing fill material to the base of that layer. During our field exploration, the existing fill material was encountered to depths ranging from 8.5 feet below the existing ground surface to beyond the limits of our soil test boring in B-3. It should be noted that in soil test boring B-3A, located approximately 5 feet to the east of soil test boring B-3, the limits of the fill soil extended to a depth of 18.0 feet below the existing ground surface. The actual existing fill depths should be verified by a representative of **Olsson** during grading operations.

Due to the close proximity of the existing school building, a full core-out scenario is not likely feasible. To complete a full core-out, temporary sheet pile would likely need to be installed along the entire length of the building addition. Therefore, in order to leave enough soil in place to safely support the footings of the existing school building, we recommend that the existing subgrade soils within a lateral offset distance of 5 feet from the base of the outer edge of the existing footings and down at a 1.5(H):1(V) slope to the native soil be left in place as depicted in Figure 1.

FIGURE 1
EXISTING FOOTING OFFSET



The approximate elevation of the native soil ranges from 1147.5 on the western side of the building to an elevation of 1149.0 on the eastern side of the building. By removing the suspect fill and developed zone and then replacing it with suitable structural fill soils the risk associated with the proposed building footings bearing in uncontrolled fill soils is minimized. Since some of the footings will bear next to the existing school building on uncontrolled fill soil that could not be removed during the core-out operation, we recommend in these area either an intermediate foundation system or helical piers be used to transfer the footing building loads through the uncontrolled fill and bear into natural alluvium material. More information on the intermediate foundation systems and helical piers can be found in the **Section E** of this report.

Excavations for the addition should be extended horizontally 5 feet beyond the perimeter of the building addition outer edge. The sides of the excavation should be sloped at a 1.5(H):1(V) to permit controlled earth fill to be placed against the sides of the excavations to the specified degree of compaction as stated in **Section D.2** of this report. Backfill placed on sloped areas within the building area shall be “benched” horizontally a minimum of five feet into the side of the slope, so that the lifts of backfill are placed and compacted in as nearly a horizontal plane as possible. Lifts of backfill material shall be placed and compacted in such a fashion to allow overlying lifts to interlock with the underlying soils to reduce consolidation potential along the slope interface. In addition to the fill placement along the slopes, the base of the excavation should be at least wide enough to allow for compaction equipment to be utilized. A representative from **Olsson** should observe the excavation operations to document conformance to the above recommendations.

Groundwater was encountered in the soil test borings at an elevation above the base of the proposed excavation and the contractor will have to determine what measures are necessary based upon their means and methods to establish a stable working platform for compaction of the structural fill. Methods of stabilization would typically include the use of crushed stone and/or a geosynthetic fabric or grid over the soft soils but the contractor should determine the appropriate stabilization method based on their means and methods. The nearly saturated to saturated soil condition at the base of excavation operations could exhibit pumping and rutting issues under the construction traffic if considerations are not given by the contractor to provide a working platform at the base of the overexcavation. The contractor will also be required to determine whatever dewatering operations they deem necessary based upon their means and methods in order to achieve the recommended excavation depth and to provide a stable subgrade necessary for compaction of structural fill.

At a minimum, excavations for the building addition in the final three feet of soil should be done with a backhoe operating type equipment, or a similar method. After excavating to the subgrade elevation, equipment access and traffic on the exposed subgrade should be kept to a minimum. Heavy scrapers and rubber tired construction equipment are not recommended for use during the excavation operations. In these areas, we recommend no proofrolling operations be implemented before structural fill is placed. If proofrolling operations were implemented, the underlying subgrade soil could result in pumping and rutting. The contractor shall be responsible for maintaining a working platform at the base of all excavations and should keep the construction traffic on the exposed subgrade soils to a minimum.

Option 2: Intermediate Foundation

The subgrade soils should be proofrolled with a loaded dump truck, scraper, or similar rubber-tired equipment weighting at least 15 tons immediately prior to the placement of structural fill. Proofrolling operations would not be necessary in construction areas limited to only panel replacement. Proofrolling operations should be observed by a representative of **Olsson**. Unstable and unsuitable soils, which are revealed by proofrolling and which cannot be adequately densified in-place, should be removed under the direction of the **Olsson** representative. It may be necessary to perform selective removal of soft, wet soils and/or stabilize existing soft soils in-place. If required, the methods of stabilization will typically include the use of crushed stone and/or geosynthetic fabric or grid installed over the soft soils. The identification of areas that may require undercutting and/or stabilization should be based on the actual conditions at the time of construction, and will depend on the location and extent of the soft area.

D.2. STRUCTURAL FILL

During construction, we recommend that all fill materials have a liquid limit of less than 45 and a plasticity index less than 25. Whenever possible, highly plastic silt (MH) or clay (CH) fill soils should not be placed within the upper three feet of the final ground elevation. Soils which have a liquid limit greater than 45 and a plasticity index greater than 25 will typically require removal or blending with less plastic materials to result in lower Atterberg limits. The on-site existing fill (silty sand and clayey sand) is considered suitable for reuse as structural fill within the building addition area.

In addition to the plasticity characteristics, the fill soils should also be relatively free of organic materials (less than about two hundredths by weight), other deleterious material and should not contain particle sizes larger than three inches. Imported fill material should be tested prior to placement at the site to verify it complies with the criteria stated in this section of the report. Samples of the proposed imported structural fill should be submitted at least three days prior to placement so the necessary laboratory tests can be performed.

Based upon Atterberg limits results, the existing fill soils appear suitable for reuse as structural fill if properly monitored during grading activities. It should be noted that varying amounts of debris was encountered in the soil test borings and the actual amount of debris at the site may be more than what was encountered in the soil test borings. If debris is encountered during grading operations that is larger than three inches in diameter or contains organic material greater than two percent, those excavated soils would not be suitable for re-use as structural fill. The suitability of the on-site soils for use as structural fill should be observed by an on-site representative of **Olsson** through Atterberg limits testing completed during construction.

Suitable fill material should be placed in thin lifts (lift thickness depends on type of compaction equipment, but in general, lifts of 8 inches loose measurement is recommended). The soil should be compacted by heavy compaction equipment such as a Caterpillar 815 sheepsfoot roller. Within small excavations, such as in utility trenches (less than 24 inches in width), around manholes or behind retaining walls, we recommend the use of "wacker packers", "Rammax" compactors, or vibrating plate compactors to achieve the specified compaction. Loose lift thickness of 4 inches are recommended in small area fills.

We recommend that structural fill and backfill be compacted in accordance with the criteria stated in Table 2. A qualified field representative should periodically observe fill placement operations and perform field density tests concurrently to indicate if the specified compaction is being achieved.

TABLE 2
STRUCTURAL FILL PLACEMENT GUIDELINES

Areas of Fill Placement	Compaction Recommendation (ASTM D698-Standard Proctor)	Moisture Content (Percent of Optimum)
Granular Cushion Beneath Floor Slab (If used)	98%	As necessary to obtain density
Floor Slab/Soil Subgrade – 12” below the base of the granular cushion (if used) or Floor Slab	98%	Optimum to +3 percent
Structural fill placed below the Floor Slab Subgrade and within 5 feet of the perimeter of the building pad	98%	-2 to +3 percent
Utility Trenches - Within building areas	98%	Optimum to +3 percent
Beneath Landscaped/Grass Areas	92%	As necessary to obtain density

The moisture content of suitable borrow soils should generally be between the specified ranges in Table 2. More stringent moisture limits may be necessary with certain soils. Adjustment of moisture content may be necessary to allow compaction in accordance with project specifications. Dependent on the percentage of fines, the clean free-draining aggregates utilized in the granular cushion beneath the floor slab could alternatively be consolidated by means of a vibratory compactor to at least 70% “relative density”, as determined in accordance with ASTM D 4253 (Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table) and D 4254 (Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculations of Relative Density).

D.3. CONSTRUCTION EQUIPMENT MOBILITY

Some of the soils encountered at this site may be highly susceptible to softening under the action of construction equipment traffic in combination with wet weather. Mitigation of equipment mobility problems and management of soft surficial soils will be greatly dependent on the severity of the problem, the season in which construction is performed and prevailing weather conditions.

Some general guidelines for reducing equipment mobility problems and dealing with soft, wet, surficial soils are as follows:

- Optimize surface water drainage at the site.
- Whenever possible, wait for dry weather conditions to prevail, and do not operate construction equipment on the site during wet conditions. Rutting the surface will only aggravate the problem.
- Use construction equipment that is well suited for the intended job under the site conditions. Heavy rubber-tired equipment typically requires better site conditions than light, track-mounted equipment, especially on granular and less cohesive soil conditions.
- Implement a construction schedule that realistically allows for rain days. Pressure to perform earthwork under a tight schedule is frequently counterproductive.

Ultimately, it may be necessary to take steps to aggressively improve construction mobility if construction must proceed under unfavorable conditions. Methods for addressing equipment mobility problems may range from removing several feet of soft wet soils, to utilizing crushed stone materials and/or appropriate stabilization fabrics. Other methods include cement modification of soils, lime stabilization, etc. The optimal approach should be determined by a representative of the geotechnical engineer at the time of construction.

Any additional disturbance below the proposed subgrade elevation should be the responsibility of the general contractor to stabilize by means which are in accordance with the project specifications and this report. Any site or soil conditions which are a result of adverse weather conditions and which may require additional measures to improve construction mobility and site conditions should be the responsibility of the general contractor. The contractor should not allow water to collect near the surface of foundation or floor slab areas, either during or after construction. Site grading should be designed to provide rapid and efficient drainage of water away from the building and pavement areas at all times during construction.

D.4. DRAINAGE AND GROUNDWATER CONSIDERATIONS

At the time of drilling operations, groundwater was encountered in soil test borings as stated in Table 1 of this report, and will likely impact construction activities if the core-out of the existing fill soils is completed. It should be noted that variations in groundwater elevations could be expected based on seasonal changes in rainfall, temperature, snow melt, runoff, localized irrigation demand, or other factors that may differ from those at the time of the drilling operations.

Based upon the groundwater depth, excavation operations could extend up to 7 feet or greater below the groundwater elevation in the lowest area of the fill core-out. In order to construct the improvements, the groundwater table will need to be lowered within the construction area. Dewatering methods that cannot sufficiently discharge the groundwater with the utilization of sump pumps could require installation of well points. Dewatering operations, if necessary, should begin in advance of excavating the variable fill soils to lower groundwater to a recommended minimum depth of 3 feet below the base of fill. The means and methods used for the dewatering operations necessary for the construction of the proposed structures is the ultimately the responsibility of the general contractor. Also, a site drainage scheme should be implemented to divert all runoff away from the construction area.

The contractor, prior to dewatering and construction activities, should perform a condition survey of the existing structures. The condition survey should include elevation reference points during dewatering operations, during construction, and at the end of construction. The settlement monitoring will provide valuable documentation regarding any associated movement because of construction operations.

In general, water should not be allowed to collect near the surface of the foundation or floor slab areas of the structures during or after construction. Since soils generally tend to soften when exposed to free water, provisions should be made to remove seepage water from excavations, should it occur. In addition, undercut or excavated areas should be sloped toward one corner to facilitate the collection and removal of rainwater or surface runoff.

The site should also be graded to avoid water flows, concentrations, or pools behind grade retaining walls. If swales are designed at the top of the walls, proper line and slope should be considered to avoid any moisture infiltration behind the walls. Special attention to sources of storm water from building roofs, gutter downspouts, and paved areas draining to one point is needed.

Additionally, in order to minimize concerns related to improper drainage away from the building foundation that tend to soften subgrade soils that are exposed to water, we provide the following general recommendations:

- Site grading should provide for efficient drainage of rainfall away from building areas, with a minimum slope of 2% for pavement areas and 5% for grass or landscaped areas.

- Roof run-off should be collected and transferred directly to the storm sewer system, if possible, or to a location well away from the building. Conventional downspout drainage leading to splash blocks, though not as desirable, may be used.
- Install clay plugs in each utility trench for utility line penetrations entering the building pad. The compacted clay plug should extend a minimum distance of five feet out from the building exterior.
- External hose connections should incorporate splash blocks to prevent localized accidental flooding of foundation soils. External hose connections should have cutoff valves inside the building to prevent accidental or unauthorized use of external hose connections.
- Building maintenance personnel should be informed of the potential problems associated with watering in close proximity to the building. Excessive watering of shrubs or lawns near buildings should be avoided. Placement of deep-rooted or water-intensive shrubs near buildings also should be avoided.

D.5. TEMPORARY SLOPES AND EXCAVATIONS

Construction site safety is the sole responsibility of the general contractor. The contractor shall also be responsible for the means, methods, techniques, sequencing, and operations during construction. The contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulation; e.g., *OSHA Health and Safety Standards for Excavations, 29 CFR Part 19266*, or successor regulations. Such regulations are strictly enforced and, if not followed, the owner, the contractor, or earthwork or utility subcontractors could be liable for substantial penalties.

E. BUILDING AND STRUCTURES

Based on the results of the soil test borings, laboratory testing and our engineering evaluation, it is our opinion that the subsurface conditions are suitable for supporting the proposed building addition on a conventional shallow foundation system in the areas where the core out operation is completed. In areas where the core out of the existing variable fill is not possible, due to the close proximity to the existing school or if the core-out option of the existing fill soils is deemed not feasible by the owner, we would recommend the building addition be designed utilizing an intermediate foundation system or helical pier foundation system. Separate recommendations for both the conventional shallow foundation system, intermediate foundation system, and helical pier foundation systems are noted below.

E.1. SHALLOW FOUNDATION DESIGN

Based on the results of the soil test borings, laboratory testing and our engineering evaluation, it is our opinion that the subsurface conditions are suitable for supporting the proposed building addition on a conventional shallow foundation system. Assuming the recommendations in **Section D** of this report are followed and that the finished floor elevation for the proposed building addition matches the existing first floor elevation of 1161.25, the interior and exterior foundations will be supported on structural fill material. Based on the above soil properties and assuming the recommendations above are followed, we recommend that the foundations be designed for a maximum net allowable soil bearing pressure of 2,500 psf.

The net allowable bearing pressure refers to the bearing pressure at foundation level in excess of the surrounding overburden pressure. Footings should have minimum dimensions in accordance with local building codes. Exterior footings and footings in unheated areas should bear at a minimum depth of 3½ feet below the lowest adjacent final ground surface. It is recommended that interior footings in heated areas bear at a depth as shallow as possible below the lowest adjacent final ground surface. The analyses for interior and exterior footings utilized bearing depths of 2 and 3½ feet, respectively, below the finished floor elevation.

Provided the recommendations contained in this report are followed, total post-construction settlements are anticipated to be less than 0.5 inch with differential settlements anticipated to be less than 0.25 inches for the building addition. Differential settlements between the existing building and the proposed addition are anticipated to be 0.5 inch or less. To reduce effects of differential settlement, a floating floor slab independent from the wall and column loads with

expansion joints will be critical in minimizing the potential cracking that can occur along and around the proposed foundation system. Floor slab control joints should be used to reduce damage due to shrinkage cracks.

It is possible that some soils at the site will have an allowable soil bearing pressure less than the recommended design value. Therefore, foundation bearing surfaces should be performed by an **Olsson** representative during footing construction to aid in the identification of such soils. After foundation subgrades have been observed and documented and any required remedial measures are performed, concrete should be placed as quickly as possible to avoid exposure of the foundation subsoils to wetting, drying or freezing. If soils in the areas of foundation support are subjected to such conditions, the footings should be reevaluated.

E.2. INTERMEDIATE FOUNDATION DESIGN – GEOPIERS OR VIBRO STONE COLUMNS

Based on the existing site conditions, the proposed building addition footings and floor slab, could potentially also be supported on an intermediate foundation system.

In order to achieve total and differential settlement values and to obtain the required bearing capacities, an intermediate foundation system could be used that can be provided by Ground Improvement Engineering or Subsurface Constructors, Inc. with Geopiers® or vibro stone columns, respectively.

Upon completion of the structural foundation plans, Ground Improvement Engineering and Subsurface Constructors, Inc. should be contacted to provide feasibility, design and cost information for the use of either Geopiers® or vibro stone columns, respectively. Table 3 provides the location, point of contact and respective phone numbers.

TABLE 3
INTERMEDIATE FOUNDATION SYSTEM CONTACTS

Company	Contact	Phone Number	Email Address
Ground Improvement Engineering	Deanna Baker	(402) 651-1673	dbaker@groundimprovementeng.com
Subsurface Constructors	W. Lyle Simonton	(314) 421-2460	lsimonton@subsurfaceconstructors.com

The intermediate systems should include the total cost associated with mobilization, installation of Geopier® or vibro stone columns including concerns related to groundwater and soil stabilization of the drilled shaft, and removal of any spoil piles. To establish a final cost estimate for the entire project, the two companies should be provided with the final site plan and the soil test boring logs drilled at the final locations of the various structures and the laboratory test results on the recovered soils. The intermediate foundation company should also provide recommendations regarding how the foundation system is to be supported and/or connected to the intermediate foundation system. At a minimum, the intermediate system should bear below the existing fill soils, into the underlying natural alluvial soils.

E.3. HELICAL PIER FOUNDATION SYSTEM

Based on the existing site conditions, the proposed building addition footings and floor slab could potentially also be supported by a helical pier foundation systems. **Olsson** recommends the helical piers elements be designed, supplied, and installed by an approved installer. We recommend utilizing helical pier foundation systems that can be provided by Foundation Supportworks by Thrasher or KC Master Companies.

Upon completion of the structural foundation and floor slab plans, Foundation Supportworks by Thrasher or KC Master Companies should be contacted to provide feasibility, design and cost information of the helical pier foundation system. Table 4 provides the location, points of contact and respective phone numbers.

**TABLE 4
HELICAL PIER FOUNDATION SYSTEM CONTACTS**

Company	Contact	Phone Number	Email Address
Foundation Supportworks by Thrasher	Bill Kirby	(402) 650-1700	bkirby@thrasherbasement.com
KC Master Companies	Jim Hill	(913) 341-2798	jhill@kcmaster.com

To establish a final cost estimate, the two companies should be provided with the final plans, soil test boring logs and the laboratory test results on the recovered soils.

The helical pier configuration should be designed by a professional engineer registered in the State of Nebraska. Prior to installing the helical piers, the contractor should provide signed and sealed shop drawings for review by the geotechnical engineer that includes the following information.

- Certification from the helical pier designer or manufacturer that the helical pier configuration proposed meets the requirements of this report.
- Product designation for helix and extension sections and all ancillary products to be supplied as part of the helical design.
- Individual pile design loads.
- Manufacturers published allowable system capacities for the pile assemblies, including load transfer devices.
- Calculated theoretical geotechnical capacity of individual piles and pile groups. Including anticipated settlement and deformation within the helical piles and/or groups.
- Pier deformation limited to $\frac{3}{4}$ inch or less.
- Minimum effective torsional resistance criteria.
- Maximum allowable installation torque of pier.
- Minimum embedment lengths and other site specific embedment depth requirements as may be appropriate for the site soil profiles.
- Inclination angle, if required, and location tolerance requirements.
- Copies of certified calibration reports for torque measuring equipment to be used on this project. The equipment calibration shall have been completed within one year prior to the helical pile installation date.
- A list of the pre-qualified, calibrated equipment that will be available on-site during the helical pier installation operations. The equipment utilized to install the helical piers should have a minimum capacity equal to 120 percent of the required installation torque.

It is recommended that the structural engineer identify the pier locations on the plans with a note indicating the allowable design load required from each pier. If variable loading conditions exist across the project site, the different load requirements may utilize different pier configurations. Determining the final helical pier bearing depth should be based on achieving the minimum allowable pier capacity required by the structural engineer. At a minimum, the helical system should bear below the existing fill soils, into the underlying natural alluvial soils. This should be accomplished by documenting that the minimum installation torque is consistently being achieved

in the field during actual installation operations. If obstructions are encountered during the helical pier installation, it may be necessary for the installation contractor to pre-drill the helical pier locations prior to installation. The installation contractor shall be responsible for installing the helical pier elements to the design depths and capacities required. It is also recommended that an **Olsson** field representative be on-site on a full-time basis to document the installation of the helical pier elements in accordance with the project plans and specifications. If the helical piers are advanced to depths greater than the proposed depths submitted in the shop drawings, the additional footage of the installed helical pier should be provided at no additional costs to the owner. If this occurs, the helical pier installer may propose a modified helical blade configuration to reduce the installation depths but still meet the minimum capacity requirements.

E.4. FLOOR SLAB SUBGRADE PREPARATION

The soil subgrade in the areas of concrete slab-on-grade support is often disturbed during foundation and superstructure construction. Additionally, floor slab areas are often disturbed by construction equipment traffic between the time of initial grading and final construction. To prepare the floor slab subgrade, the top 12 inches of the subgrade in the building area should be scarified and re-compacted to a minimum of 98 percent of the maximum dry density as determined by the standard Proctor test (ASTM D698-91). The moisture content should also be controlled between optimum and +3 percent of the materials optimum. The final subgrade should be proofrolled and evaluated by a field representative immediately prior to placement of the concrete to detect any localized areas of instability. If required, the methods of stabilization will typically include the use of crushed stone and/or a geosynthetic fabric or grid installed over the soft soils. The identification of areas that may require undercutting and/or stabilization should be based on the actual conditions at the time of construction, and will depend on the location and extent of the soft area. In regards to the moisture levels of the subgrade, additional water application may be necessary to maintain moisture levels above optimum. It is imperative that the subgrade soil be at or above the optimum level prior to the placement of the aggregate base (if used) and concrete floor slab.

To reduce the potential for moisture leaching from the concrete after placement, it is also recommended that enough water be added to nearly saturate the granular cushion. The granular cushion should be compacted to a minimum of 70 percent of the materials relative density. Laboratory maximum and minimum index density for the relative density tests should be performed in accordance with ASTM D4253 and D4254. If these recommendations are implemented, a subgrade modulus of at least 125 psi/in for the floor slab design is acceptable.

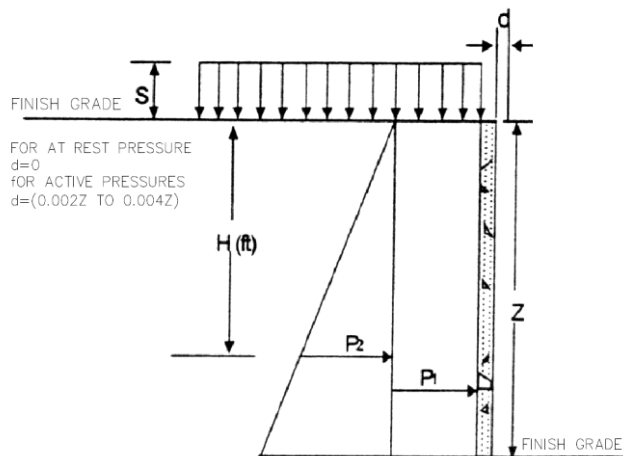
E.5. LATERAL EARTH PRESSURES

The following soil parameters are provided for use in designing grade retaining walls and/or foundation walls subject to lateral earth pressures. The parameters are based on the understanding that retained soils will be similar in composition to the on-site soils encountered during this investigation.

Walls which are rigidly restrained at the top and are essentially unable to deflect or rotate should be designed for "at rest" earth pressure conditions. Walls that are unrestrained at the top and are free to deflect or rotate slightly may be designed for "active" earth pressure conditions. The "passive" earth pressure condition should be used to evaluate the resistance of soil to lateral loads. Table 5 presents recommended values of earth pressure coefficients based on our experience with soils in the area. Equivalent fluid densities are frequently used for the calculation of lateral earth pressures for the "at-rest" and "active" conditions and are therefore provided in Table 5. The equivalent fluid densities in Table 5 do not include the effects of surcharge loading (P_1).

TABLE 5
EARTH PRESSURE PARAMETERS

LEGEND OF SYMBOLS			
Z	WALL HEIGHT (ft)		
H	DEPTH BELOW SURFACE (ft)		
d	WALL DISPLACEMENT (ft)		
S	SURCHARGE LOAD (psf)		
P ₁	SURCHARGE PRESSURE (psf)		
P ₂	EARTH LOAD (psf)		
K	COEFFICIENT OF EARTH PRESSURE		
G	EQUIVALENT FLUID DENSITY (pcf)		
PRESSURE CALCULATIONS			
SURCHARGE PRESSURE	$P_1 \text{ (psf)} = K \times S \text{ (psf)}$		
EARTH PRESSURE	$P_2 \text{ (psf)} = G \text{ (pcf)} \times H \text{ (ft)}$		
BACKFILL TYPE		FRICITION ANGLE	TOTAL SOIL DENSITY
COHESIVE -	Lean Clay (CL)	26°	120 pcf
GRANULAR* -	Less than 10% Fines (SP, GP)	32°	120 pcf
EARTH PRESSURE COEFFICIENT (K)		EQUIVALENT FLUID DENSITY (G)	
		DRAINED CONDITION	UNDRAINED CONDITION
AT REST (K ₀)	Cohesive - 0.56	68 pcf	95 pcf
	Granular* - 0.47	56 pcf	
ACTIVE (K _a)	Cohesive - 0.39	47 pcf	85 pcf
	Granular* - 0.31	37 pcf	
PASSIVE (K _p)	Cohesive - 2.00	240 pcf	170 pcf
	Granular* - 3.00	360 pcf	



* If granular backfill is utilized, it is recommended the granular backfill be permanently drained

These design recommendations are based on the following assumptions:

- For active earth pressure, wall must rotate about base, with top lateral movements 0.002 Z to 0.004 Z, where Z is wall height.
- Drained conditions assume a permanent drainage system behind the retaining wall that will allow no development of hydrostatic pressure.
- Horizontal backfill.
- The upper 40 inches do not contribute resistance against horizontal movement if the soil is subject to frost action and seasonal volume change.
- On-site backfill soils having a bulk unit weight of 120 pcf.
- Backfill soils placed within the height of the retaining wall consisting of selected lean clay should be tested to verify the lean clays exhibit low plasticity and can achieve a minimum friction angle of 26 degrees.
- Imported granular backfill soils having a minimum angle of internal friction of 32 degrees.
- Uniform surcharge, where S is surcharge pressure, in psf.
- Heavy equipment and other concentrated load components not included.
- No safety factor is included.

Backfill soils placed within a lateral distance from the face of the wall to seven tenths of the wall height could consist of selected lean clay exhibiting an Atterberg liquid limit of less than 40. For granular soils, the granular backfill must extend out from the base of the wall at an angle of 45 and 60 degrees from the vertical wall for the active and passive cases, respectively. To calculate the resistance to sliding on native soil and crushed angular limestone, an ultimate coefficient of friction value of 0.3 and 0.45 should be used, respectively, where the footing bears on suitable approved bearing soil. A factor of safety of at least 1.5 to 2 should be applied.

F. LIMITATIONS

The conclusions and recommendations presented in this report are based on the information available regarding the proposed construction, the results obtained from our soil test borings and sampling procedures, the results of the laboratory testing program, and our experience with similar projects. The soil test borings represent a very small statistical sampling of subsurface soils and conditions may be encountered during construction that are substantially different from those indicated by the soil test borings. In these instances, adjustments to design and construction may be necessary.

This geotechnical report is based on the site plan and information provided to **Olsson** and our understanding of the project as noted in this report. Changes in the location or design of new structures could significantly affect the conclusions and recommendations presented in this geotechnical report. **Olsson** should be contacted in the event of such changes to determine if the recommendations of this report remain appropriate for the revised site design.

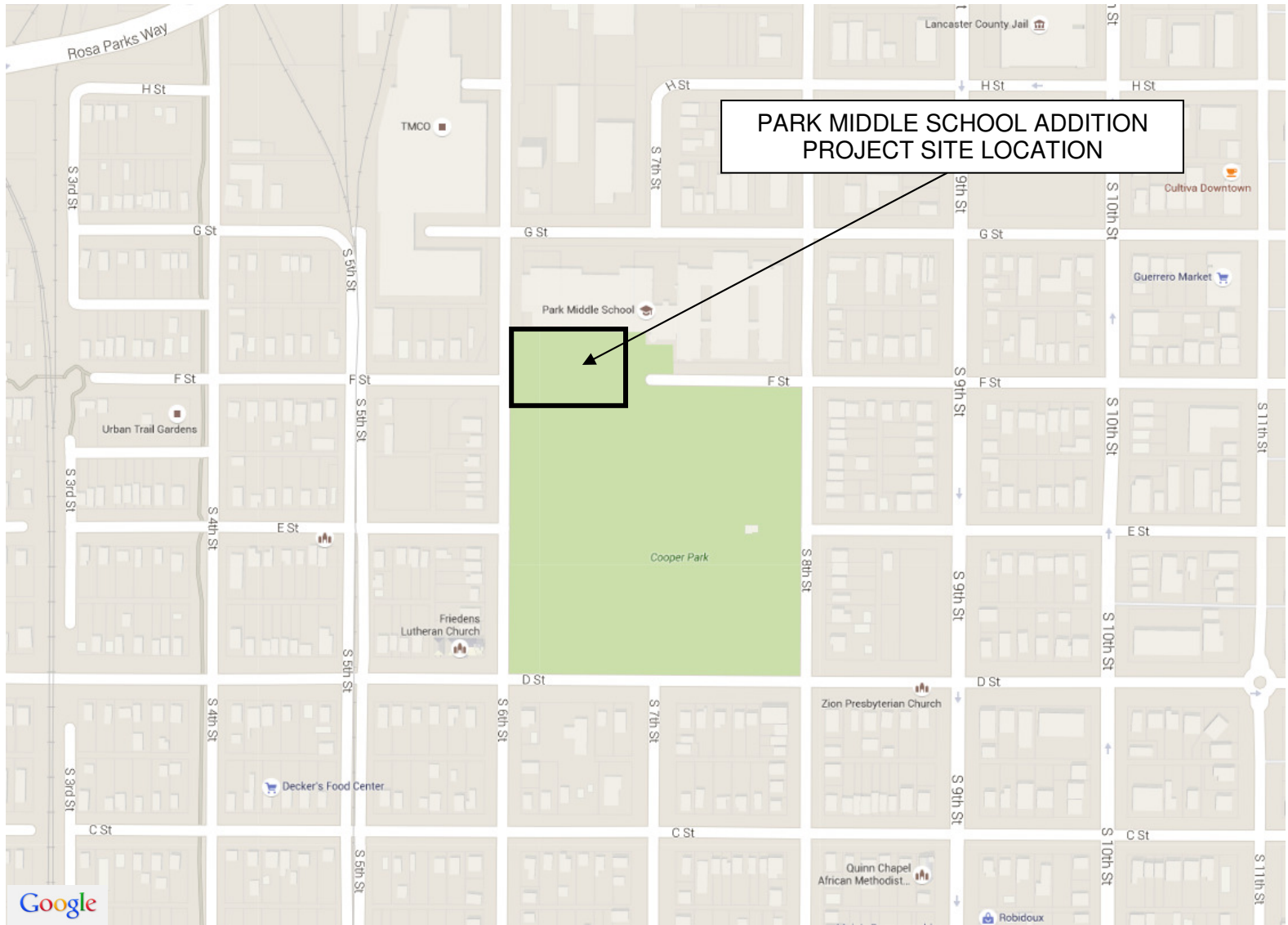
Soil stratification, as shown on the Boring Logs, represent soil conditions at the boring locations; however, variations may occur between or around the boring locations. The lines of demarcation represent the approximate boundary between soil types but the transition may be more gradual.

This report was prepared by an Engineer Intern and reviewed by a Professional Engineer registered in the State of Nebraska with the firm **Olsson Associates (Olsson)**. The conclusions and recommendations contained herein are based on generally accepted, professional, geotechnical engineering practice at the time of this report within this geographic area. No other warranty is expressed or implied. This report has been prepared for the exclusive use of the **Lincoln Public Schools** with specific application to the proposed project.

We trust that this report will assist you in the design and construction of the proposed project. **OLSSON** appreciates the opportunity to provide our services on this project and looks forward to working with you during construction and on future projects. Should you have any questions, please do not hesitate to contact us.

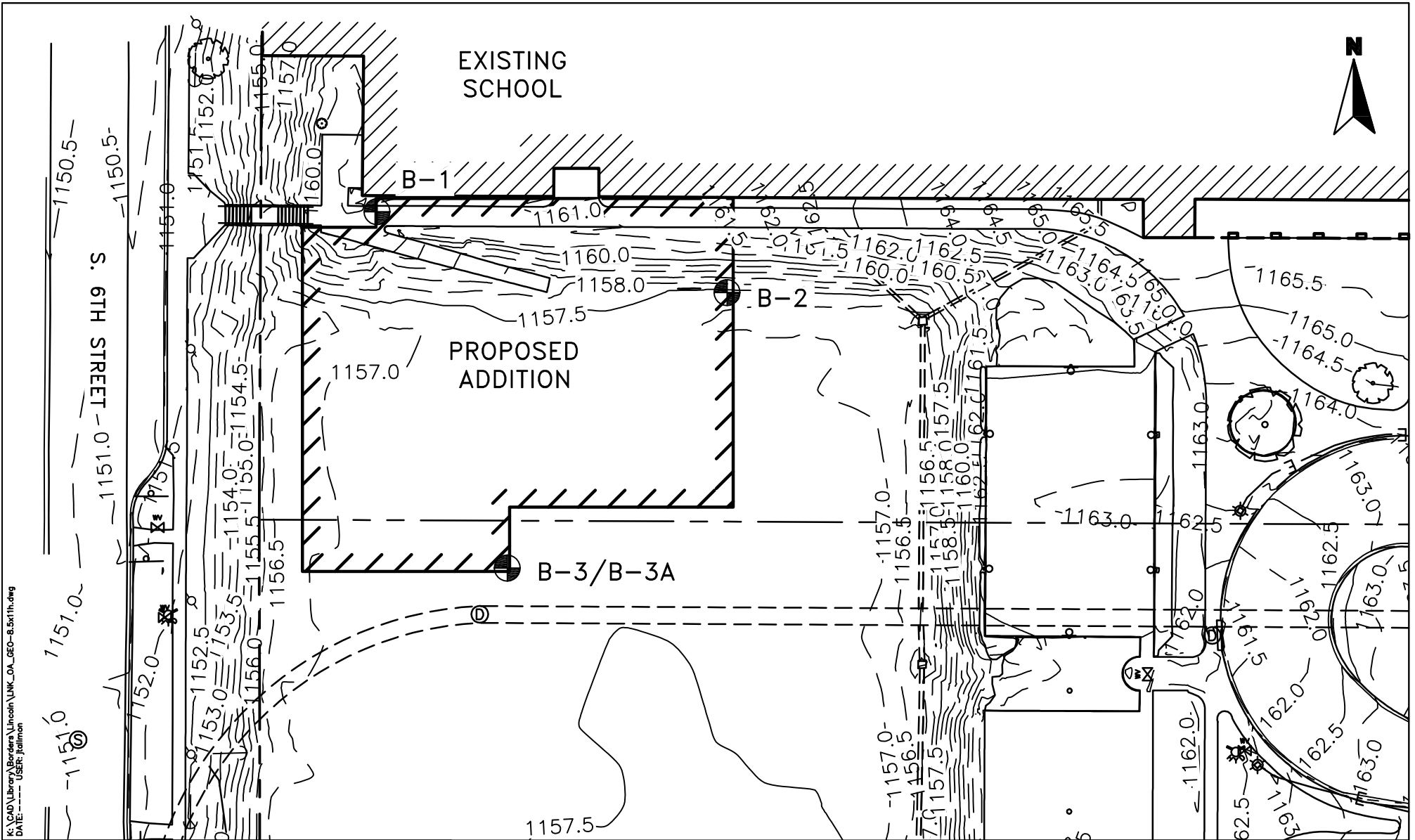
APPENDIX A

**Site Location Plan
Boring Location Map**



**SITE LOCATION PLAN
PARK MIDDLE SCHOOL ADDITION
LINCOLN, NEBRASKA
OA PROJECT NO. 015-3515**

K:\CAD Library\Borehole\Lincoln\LNK_OA_GEO-8.5x11h.dwg
DATE: 1/15/16
USER: jtdm



LEGEND	
	SOIL BORING LOCATION
PROJECT: 015-3515	
DATE: 1/15/16	DRAWN BY: NAM

0 20 40 80
SCALE IN FEET

BORING LOCATION MAP
LINCOLN, NEBRASKA

OLSSON
ASSOCIATES

601 P Street, Suite 200
P.O. Box 84608
Lincoln, NE 68508

TEL 402.474.6311
FAX 402.474.5160
www.olssonassociates.com

APPENDIX B

Symbols & Nomenclature

Boring Logs

SYMBOLS AND NOMENCLATURE

DRILLING NOTES

DRILLING AND SAMPLING SYMBOLS

SS: Split-Spoon Sample (1.375" ID, 2.0" OD)	HSA: Hollow Stem Auger	NE: Not Encountered
U: Thin-Walled Tube Sample (3.0" OD)	CFA: Continuous Flight Auger	NP: Not Performed
CS: Continuous Sample	HA: Hand Auger	NA: Not Applicable
BS: Bulk Sample	CPT: Cone Penetration Test	% Rec: Percent of Recovery
MC: Modified California Sampler	WB: Wash Bore	WD: While Drilling
GB: Grab Sample	FT: Fish Tail Bit	IAD: Immediately After Drilling
SPT: Standard Penetration Test Blows per 6.0"	RB: Rock Bit	AD: After Drilling
		CI: Cave-In

DRILLING PROCEDURES

Soil samples designated as "U" samples on the boring logs were obtained in using Thin-Walled Tube Sampling techniques. Soil samples designated as "SS" samples were obtained during Penetration Test using a Split-Spoon Barrel sampler. The standard penetration resistance 'N' value is the number of blows of a 140 pound hammer falling 30 inches to drive the Split-Spoon sampler one foot. Soil samples designated as "MC" were obtained in using Thick-Walled, Ring-Lined, Split-Barrel Drive sampling techniques. Recovered samples were sealed in containers, labeled, and protected for transportation to the laboratory for testing.

WATER LEVEL MEASUREMENTS

Water levels indicated on the boring logs are levels measured in the borings at the times indicated. In relatively high permeable materials, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels is not possible with only short-term observations.

SOIL PROPERTIES & DESCRIPTIONS

Descriptions of the soils encountered in the soil test borings were prepared using Visual-Manual Procedures for Descriptions and Identification of Soils.

PARTICLE SIZE

Boulders	12 in. +	Coarse Sand	4.75mm-2.0mm	Silt	0.075mm-0.005mm
Cobbles	12 in.-3 in.	Medium Sand	2.0mm-0.425mm	Clay	<0.005mm
Gravel	3 in.-4.75mm	Fine Sand	0.425mm-0.075mm		

COHESIVE SOILS

<u>Consistency</u>	<u>Unconfined Compressive Strength (Qu) (tsf)</u>	
	Very Soft	<0.25
Soft	0.25 - 0.5	
Firm	0.5 - 1.0	
Stiff	1.0 - 2.0	
Very Stiff	2.0 - 4.0	
Hard	> 4.0	

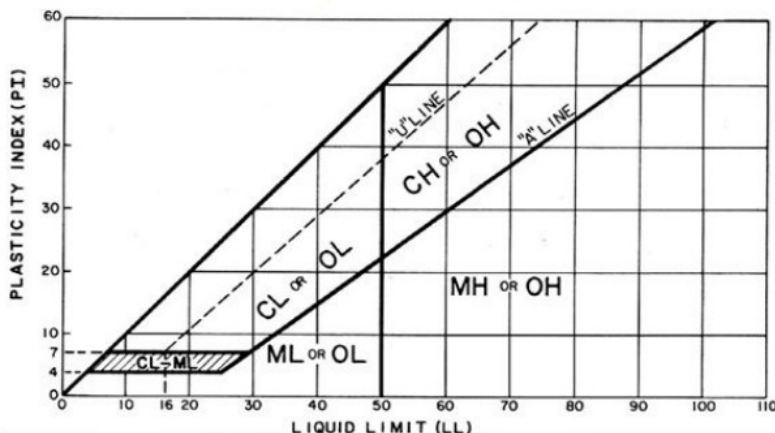
COHESIONLESS SOILS

<u>Relative Density</u>	<u>'N' Value</u>
Very Loose	0 - 3
Loose	4 - 9
Medium Dense	10 - 29
Dense	30 - 49
Very Dense	≥ 50

COMPONENT %

<u>Description</u>	<u>Percent (%)</u>
Trace	<5
Few	5 - 10
Little	15 - 25
Some	30 - 45
Mostly	50 - 100

PLASTICITY CHART



ROCK QUALITY DESIGNATION (RQD)

<u>Description</u>	<u>RQD (%)</u>
Very Poor	0 - 25
Poor	25 - 50
Fair	50 - 75
Good	75 - 90
Excellent	90 - 100



PROJECT NAME: **Park Middle School Addition** CLIENT: **Lincoln Public Schools**

PROJECT NUMBER: **015-3515** LOCATION: **Lincoln, Nebraska**

ELEVATION (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	DEPTH (ft)	SAMPLE TYPE NUMBER	CLASSIFICATION (USCS)	BLOWS/6" N-VALUE	UNC. STR. (tsf)	MOISTURE (%)	DRY DENSITY (pcf)	LL/PI (%)	ADDITIONAL DATA/REMARKS
	<p>APPROX. SURFACE ELEV. (ft): 1161.0</p> <p>CONCRETE FILL</p> <p>Lean clay (CL) Stiff, yellow brown, moist, mostly lean clay, little fine to medium sand, trace coarse sand</p> <p>Lean clay (CL) Firm, yellow brown, moist, mostly lean clay, little fine to medium sand, trace coarse sand</p> <p>Sandy lean clay (CL) Firm, light brown, dry, mostly lean clay, some fine to medium sand</p> <p>Clayey sand (SC) Medium dense, medium brown, dry, mostly fine to medium sand, some clay</p> <p>ALLUVIUM</p> <p>Lean clay (CL) Stiff, dark grey brown, moist, mostly lean clay, few silt, trace fine sand</p> <p>Lean clay (CL) Firm, dark grey brown, wet, mostly lean clay, few silt, trace fine sand</p>		0	U 1			1.3	18.1	103.9		
1160				U 2							
1155			5	U 3				7.5	105.2		
				U 4				9.0			P-200 = 30.2%
1150			10	U 5			1.0	24.0	95.9		
1145			15	SS 6		2-3-4 N=7					
			20								

BASE OF BORING AT 20.0 FEET

WATER LEVEL OBSERVATIONS	
WD	▽ 18.0 ft
IAD	▽ 18.2 ft after 0 Hrs
AD	▽ 16.9ft after 24Hrs

OLSSON ASSOCIATES
601 P STREET, SUITE 200
LINCOLN, NEBRASKA 68508

STARTED:	12/29/15	FINISHED:	12/30/15
DRILL CO.:	OLSSON	DRILL RIG:	CME 45C
DRILLER:	JSR	LOGGED BY:	JJM
METHOD:	CONTINUOUS FLIGHT AUGER		

PROJECT NAME: **Park Middle School Addition** CLIENT: **Lincoln Public Schools**


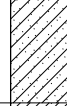

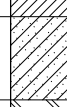



PROJECT NUMBER: **015-3515** LOCATION: **Lincoln, Nebraska**

ELEVATION (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	DEPTH (ft)	SAMPLE TYPE NUMBER	CLASSIFICATION (USCS)	BLOWS/6" N-VALUE	UNC. STR. (tsf)	MOISTURE (%)	DRY DENSITY (pcf)	LL/PI (%)	ADDITIONAL DATA/REMARKS
	APPROX. SURFACE ELEV. (ft): 1157.5		0								
	DEVELOPED ZONE FILL		0.2'								
1155	Lean clay (CL) Stiff, dark yellow brown, moist, mostly lean clay, few fine to medium sand, trace glass		3.0'	U 1			1.3	23.8	99.9		
	Clayey, silty sand (SC/SM) Loose, dark brown, moist, mostly fine to medium sand, some silty lean clay, trace brick		5	U 2				15.6	70.5		
1150	Lean to fat clay (CL/CH) Soft, yellowish brown with grey, very moist, mostly lean to fat clay, trace fine sand, iron staining		6.5'	U 3				26.2	78.7		
	ALLUVIUM		8.5'								
	Lean clay (CL) Firm, dark brown, moist, mostly lean clay, few silt, few fine sand		10	U 4							
1145	Lean clay (CL) Firm, greyish brown, wet, mostly lean clay, little fine sand		15	U 5				22.6	102.3		
	BASE OF BORING AT 15.0 FEET		15.0'								

WATER LEVEL OBSERVATIONS		OLSSON ASSOCIATES 601 P STREET, SUITE 200 LINCOLN, NEBRASKA 68508	STARTED: 12/29/15	FINISHED: 12/30/15
WD	▽ 13.5 ft		DRILL CO.: OLSSON	DRILL RIG: CME 45C
IAD	▽ 13.5 ft after 0 Hrs		DRILLER: JSR	LOGGED BY: JJM
AD	▽ 13.1ft after 24Hrs		METHOD: CONTINUOUS FLIGHT AUGER	

PROJECT NAME: **Park Middle School Addition** CLIENT: **Lincoln Public Schools**

PROJECT NUMBER: **015-3515** LOCATION: **Lincoln, Nebraska**

ELEVATION (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	DEPTH (ft)	SAMPLE TYPE NUMBER	CLASSIFICATION (USCS)	BLOWS/6" N-VALUE	UNC. STR. (tsf)	MOISTURE (%)	DRY DENSITY (pcf)	LL/PI (%)	ADDITIONAL DATA/REMARKS
	GRAVEL FILL		0								
1155	Clayey sand (SC) Loose, yellowish brown, moist, mostly fine to medium sand, some clay		3.5'	U 1				12.0			P-200 = 42.0%
	Lean clay (CL) Soft, dark brown, moist, mostly lean clay, trace fine to medium sand		5	U 2	CL			18.7	81.8	33/17	
1150	Clayey sand (SC) Medium dense, yellowish brown, moist, mostly fine to medium sand, little clay		6.5'	U 3							
	Lean to fat clay (CL/CH) Firm, yellowish brown to dark brown, moist, mostly lean to fat clay, few fine to medium sand, iron staining		8.5'	U 4				21.9	99.5		
1145	Lean clay (CL) Soft, dark greyish brown, wet, mostly lean clay, few fine sand		13.5'	U 5				26.8	93.4		
1140	Lean clay (CL) Stiff, greyish brown to dark brown, wet, mostly lean clay, trace fine sand, iron staining		20.0'	U 6				24.8	99.0		

BASE OF BORING AT 20.0 FEET

WATER LEVEL OBSERVATIONS	
WD	▽ 14.0 ft
IAD	▽ 14.5 ft after 0 Hrs
AD	▽ 13.2ft after 24Hrs

OLSSON ASSOCIATES
601 P STREET, SUITE 200
LINCOLN, NEBRASKA 68508

STARTED:	12/29/15	FINISHED:	12/30/15
DRILL CO.:	OLSSON	DRILL RIG:	CME 45C
DRILLER:	JSR	LOGGED BY:	JJM
METHOD:	CONTINUOUS FLIGHT AUGER		

PROJECT NAME: **Park Middle School Addition** CLIENT: **Lincoln Public Schools**

PROJECT NUMBER: **015-3515** LOCATION: **Lincoln, Nebraska**

ELEVATION (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	DEPTH (ft)	SAMPLE TYPE NUMBER	CLASSIFICATION (USCS)	BLOWS/6" N-VALUE	UNC. STR. (tsf)	MOISTURE (%)	DRY DENSITY (pcf)	LL/PI (%)	ADDITIONAL DATA/REMARKS
	APPROX. SURFACE ELEV. (ft): 1157.5		0								
	GRAVEL FILL		0.1'								
1155	Clayey sand (SC) Medium dense, light brown, dry to moist, mostly fine to medium sand, some clay			U 1				13.7	114.4		
	Clayey sand (SC) Medium dense, light brown to dark brown, dry, mostly fine to medium sand, little clay, trace brick		5	U 2				9.0			P-200 = 26.3%
1150	Clayey sand (SC) Medium dense, light brown to brown, dry, mostly fine to medium sand, little clay, trace brick		7.5'	U 3				14.0	106.8		
	Lean to fat clay (CL/CH) Firm, dark greyish brown, moist, mostly lean to fat clay, trace fine sand		10	U 4							
1145	Lean to fat clay (CL/CH) Soft, light to dark greyish brown, wet, mostly lean to fat clay, trace fine sand		15	U 5				28.1	93.5		
1140	ALLUVIUM		18.0'								
	Lean clay (CL) Firm, light to dark greyish brown, wet, mostly lean clay, trace fine sand		20.0'	U 6				32.4	87.7		

BASE OF BORING AT 20.0 FEET

WATER LEVEL OBSERVATIONS	
WD	▽ 13.0 ft
IAD	▼ 13.9 ft after 0 Hrs
AD	▽ Not Performed

OLSSON ASSOCIATES
601 P STREET, SUITE 200
LINCOLN, NEBRASKA 68508

STARTED:	12/30/15	FINISHED:	12/30/15
DRILL CO.:	OLSSON	DRILL RIG:	CME 45C
DRILLER:	JSR	LOGGED BY:	SAS
METHOD:	CONTINUOUS FLIGHT AUGER		

APPENDIX C

Summary of Laboratory Test Results

PROJECT NAME: Park Middle School Addition

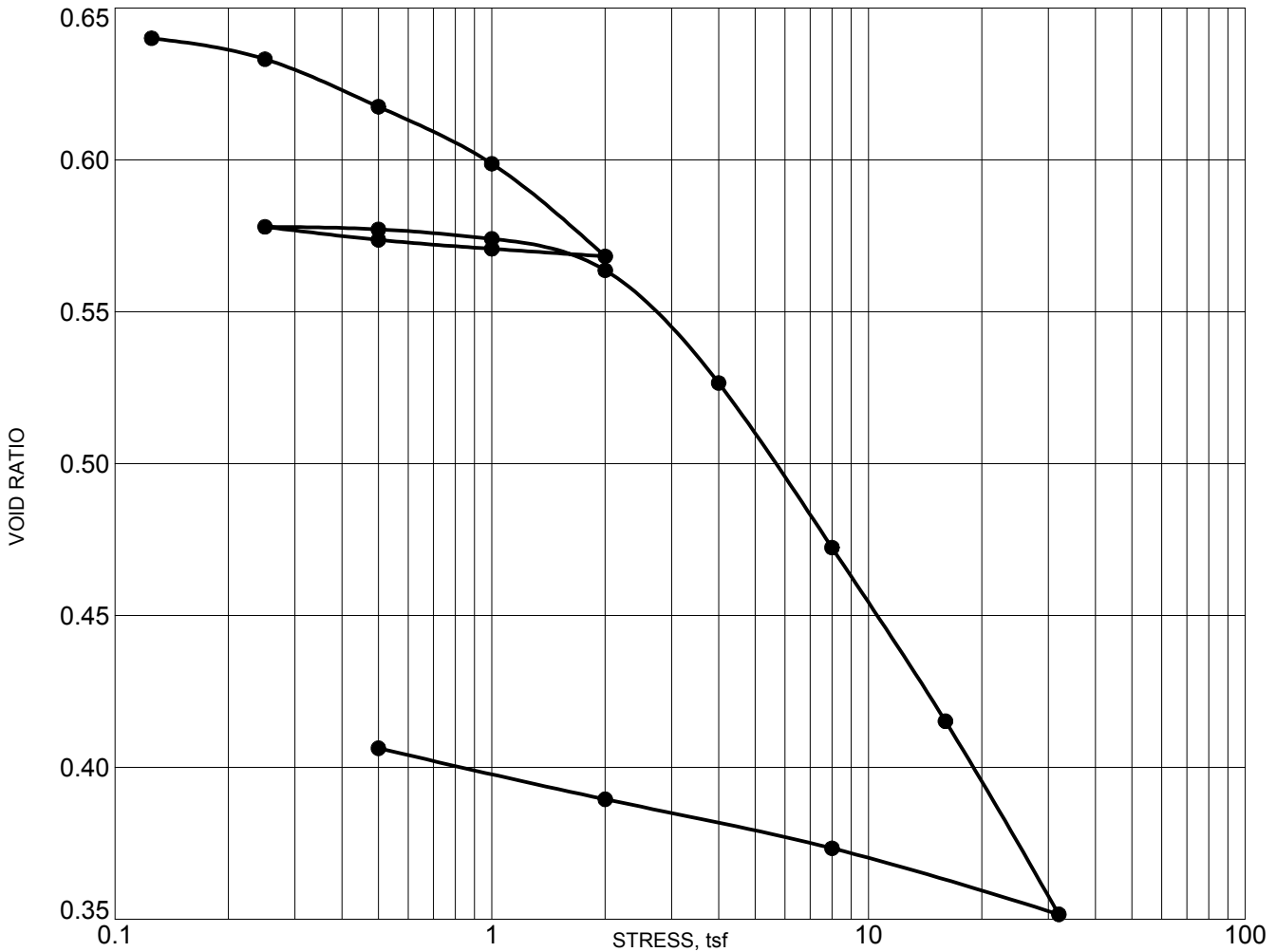
CLIENT: Lincoln Public Schools

PROJECT NUMBER: 015-3515

PROJECT LOCATION: Lincoln, Nebraska

BORING NUMBER	SAMPLE I.D.	SAMPLE DEPTH (ft)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	VOID RATIO	SATURATION (%)	UNCONFINED STRENGTH (tsf)	STRAIN (%)	ATTERBERG LIMITS			P-200	USCS CLASS.
									LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX		
B-1	U-1	1.0 - 2.5'	18.1	103.9	0.622	78.5	1.3	4.2					
B-1	U-3	6.0 - 7.5'	7.5	105.2	0.602	33.8							
B-1	U-4	8.5 - 10.0'	9.0								30.2		
B-1	U-5	13.5 - 15.0'	24.0	95.9	0.758	85.6	1.0	3.4					
B-2	U-1	1.0 - 2.5'	23.8	99.9	0.688	93.3	1.3	3.7					
B-2	U-2	3.5 - 5.0'	15.6	70.5	1.391	30.2							
B-2	U-3	6.0 - 7.5'	26.2	78.7	1.142	62.0							
B-2	U-5	13.5 - 15.0'	22.6	102.3	0.647	94.4							
B-3	U-1	1.0 - 2.5'	12.0								42.0		
B-3	U-2	3.5 - 5.0'	18.7	81.8					33	16	17		CL
B-3	U-4	8.5 - 10.0'	21.9	99.5									
B-3	U-5	13.5 - 15.0'	26.8	93.4									
B-3	U-6	18.5 - 20.0'	24.8	99.0									
B-3A	U-1	1.0 - 2.5'	13.7	114.4	0.473	78.0							
B-3A	U-2	3.5 - 5.0'	9.0								26.3		
B-3A	U-3	6.0 - 7.5'	14.0	106.8	0.578	65.5							
B-3A	U-5	13.5 - 15.0'	28.1	93.5	0.802	94.4							
B-3A	U-6	18.5 - 20.0'	32.4	87.7	0.922	95.0							

PROJECT NAME: Park Middle School Addition CLIENT: Lincoln Public Schools
 PROJECT NUMBER: 015-3515 PROJECT LOCATION: Lincoln, Nebraska



Boring No: B-2 Initial Water Content (%): 22.6 Est. Preconsolidated Stress (tsf): 1.7

Sample ID: U-5 Final Water Content (%): 15.7 Laboratory Water Type: Distilled Water

Sample Depth: 13.5 - 15.0' Initial Dry Density (pcf): 102.3 Test Procedure Method: NA

Start Date: 1/07/16 Initial Void Ratio: 0.650 Interpretation Procedure: NA

Technician: D. KOWALSKI Final Void Ratio: 0.410 Stress at Inundation (psf): 50.0

Apparatus: LT II - 66 Initial Degree of Saturation (%): 94.4 Specimen Trimming Method: Turntable

Specific Gravity: 2.7 Final Degree of Saturation (%): 100.0

ATTERBERG LIMITS
LL PL PI Classification

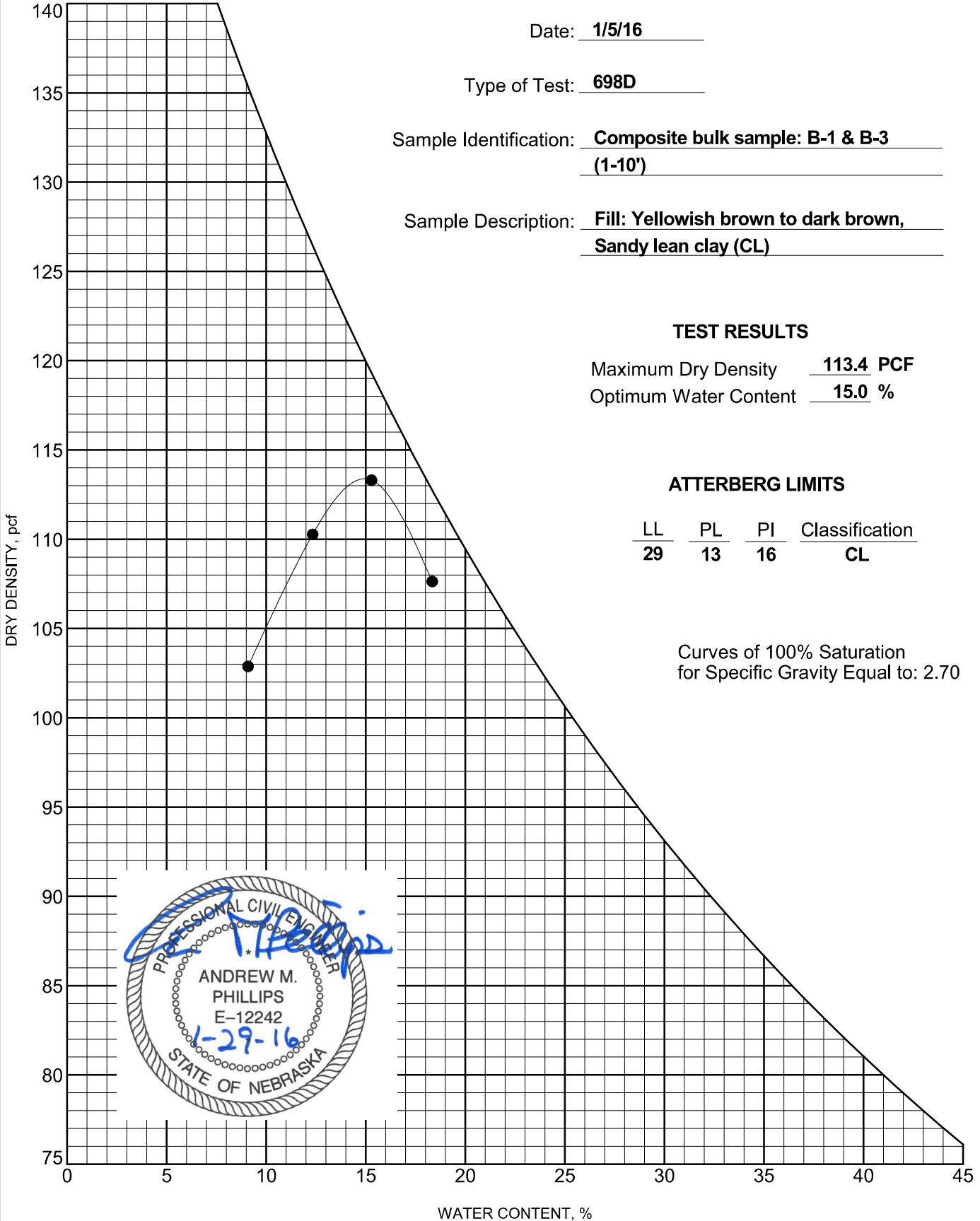
Sample Description: Alluvium: Greyish brown, Lean clay (CL) Notes: _____

PROJECT NAME: Park Middle School Addition

CLIENT: Lincoln Public Schools

PROJECT NUMBER: 015-3515

PROJECT LOCATION: Lincoln, Nebraska



Handwritten Signature: Andrew M. Phillips

PROFESSIONAL CIVIL ENGINEER
 ANDREW M. PHILLIPS
 E-12242
 1-29-16
 STATE OF NEBRASKA

ATTACHMENT E:

Pre-Construction Conference Agenda and Attendance Sign-in Sheet

Pre-Bid Conference Agenda

Project: Park Middle School Addition Project
EA Project No: 15-2100
LPS Bid Package No: 8369
Date/Time: January 26, 2016, 3:30 pm
Location: Park Middle School, 855 S. 8th St., Lincoln, NE

1. INTRODUCTIONS

- a. Introduction of Owner and Design Team present
- b. Sign-in sheet

2. PROJECT ORIENTATION

- a. Location
 - i. Existing building
 - ii. Addition area
 - iii. Secured entry renovation area
 - iv. Geothermal well field area
- b. General scope of work
- c. Work parameters
 - i. LPS tobacco free site policy
 - ii. Neighborhood considerations – noise, street traffic, etc.
- d. Students on site and in school for 2016/2017 school year
- e. Site utilization/material storage
- f. Schedule – Substantial Completion required by December 30, 2016.
- g. Phasing

3. BIDDING REQUIREMENTS

- a. Bid Opening February 11, 2016, 2:00 pm
 - i. Location: LPS Facilities and Maintenance, Training Room. 800 S. 24th St., Lincoln, NE 68510
- b. Specific bidding requirements
 - i. Bid form
 - ii. Bid security – 5% Bond required
- c. LPS sample A101 and B201 Contract documents
 - i. Available on-line for review at: <http://www.lps.org/busaff/purchasing/index.html>
 - ii. Documents are under the “Resources for Vendors” tab, “AIA Additions and Deletions”

4. SUPPLEMENTARY CONDITIONS

- a. Questions and interpretation of documents
 - i. Contact and method for answering questions:
 - ii. Brian Nelsen, 402-477-2404, brian@encompassarch.com
- b. Addenda
 - i. This is the only method for revising documents – no verbal interpretations will be given
 - ii. Prior Approvals & Substitution Requests due 10 days prior to Bid Date (Monday February 1st, 2016) to be considered and included in Addendum
 - iii. Basis of Design Substitutions: See Section 12500 and Section 016000.
- c. Anticipated schedule issue Addendum – Monday, February 1st, 2016.

5. QUESTIONS

6. TOUR and REVIEW OF SITE

7. ADJOURN

